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ABSTRACT

Developed as part of the Physical Education In-Service Training Project of the University of Kentucky, this manual is designed to help special education teachers and adapted physical education teachers promote the motor and play skills of handicapped students through planned activities. Content areas of the manual were identified as "greatest concerns" on a needs assessment. Following an initial chapter on P.L. 94-142 (the Education for All Handicapped Children Act) and Section 504 of the Rehabilitation Act of 1973, the manual considers identification, screening, assessment, and evaluation (both formal and informal measures). Physical evaluation and the development of the individualized education program are covered in a third chapter, with sections on annual goals, short term instructional objectives, and options for placement of children in the least restrictive environment appropriate. In the fourth chapter, prescriptive teaching is addressed in terms of six steps: defining the program, planning, assessing the student, prescribing activities, teaching, and evaluating the program. Chapter 5 discusses approaches to adapting activities through analysis of six factors (players, equipment, movement patterns, organizational patterns, limitations, and purpose). Disability considerations for structuring the movement environment are grouped according to input (sensory) disorders, integration (information processing) disorders, and output (physical) disorders. A final chapter lists references on adapted physical education topics, and the appendix provides a sign language alphabet and selected terms. (CL)

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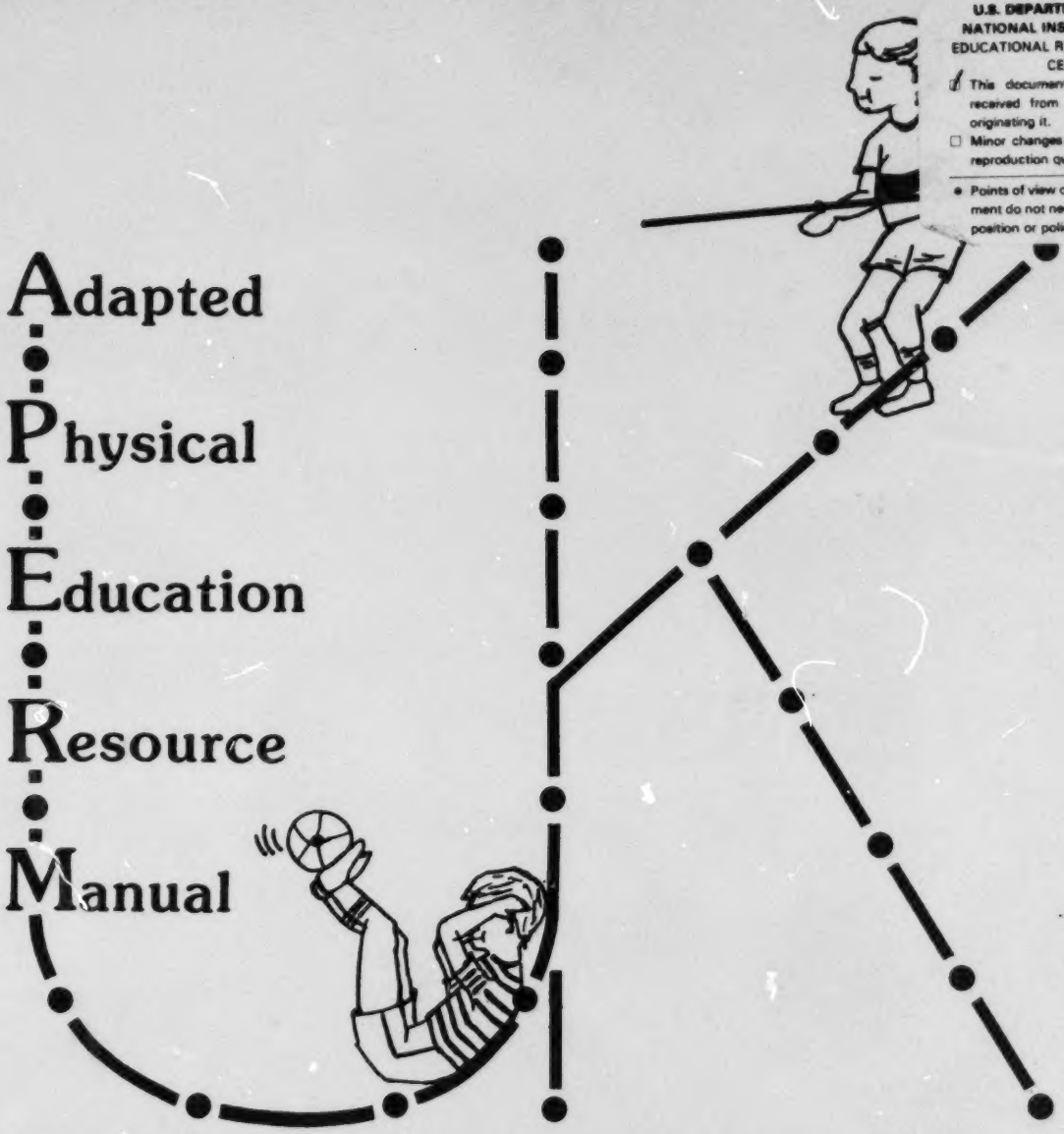
Adapted Physical Education Resource Manual



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ADAPTED PHYSICAL EDUCATION

RESOURCE MANUAL

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FORWARD

The purpose of this manual is to provide a readily accesible resource to physical educators, special educators or other individuals who provide motor programs for exceptional children. The manual is a product of the Physical Education In-Service Training Project Grant No. G008101942, Project No. 029AH20352. The project was awarded to the University of Kentucky at Lexington, Kentucky by the U.S. Department of Education, Office of Special Education and Rehabilitative Services. The in-service project covered a period from August 1, 1981 to May 31, 1984.

The manual represents one part of the project which emphasized the in-service training of teachers in adapted physical education in Central and Eastern Kentucky. The manual provides relavent information for teachers in Kentucky in the areas of: legislation; identification; assessment and evaluation; individualized education programs in physical education; prescriptive teaching; analyzing activities for use in the gym; disability considerations for movement environments and; resources in the areas of tests, curriculums, text books, manuals and individuals.

The content areas contained in the manual are those which were identified as the greatest concerns on a needs assessment conducted prior to the grant award. These areas have also been targeted in the in-service training throughout the project.

Play has often been referred to as the business of childhood. It is a spontaneous, volitional and socially acceptable method for exploring and learning. It is the primary tool for early development. Although play may involve non-observable movement, movement experiences have an important role in play and development. Through movement, the child develops the body and improves the ability to play and to move through their environment. The importance of movement is observable in the continuous movement of children during the early years. It is obvious that much of a child's early learning and development involves learning to move. As age increases, movement abilities and experiences become more complex. As the child enters school, movement experiences become more structured, organized and norm referenced. They become involved in games, sports, aquatics, dance, gymnastics and tumbling if they have the potential for successful movement in these experiences.

We hope this manual assists teachers with programming for their exceptional learner. Because motor development and play skills are no less important for them.

John Hall

Project Director

ADAPTED PHYSICAL EDUCATION RESOURCE MANUAL

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Chapter 1

Legislation

Several factors have contributed to improved education of exceptional children. One of the early factors contributing to this improvement was compulsory school attendance. During the 1950s and '60s school districts began to establish special classes to meet needs of more exceptional children. There were also improvements in educational techniques and teacher training. Proponents of this movement eventually questioned the effectiveness of special classes and maintained that the handicapped child's civil rights were being violated if he/she wasn't receiving a quality, free public education.

During 1974-75, Congress cited many reasons for the need of a law providing for the educational needs of handicapped children. The major reasons were that the special education needs of the handicapped were not being met and that the state and local education agencies have a responsibility to provide appropriate public education for all handicapped children. At this time, there were over 8 million handicapped children in the United States (ages 3-21); approximately 1 million of these children were excluded entirely from a free public education. Many families were forced to solicit services outside of the public schools at their own expense. Congress also cited that many handicapped children in need of special education had gone undetected. Congress felt that through enactment of legislation and provision of funds the handicapped child could be better educated and more efficient assessment and teacher training could occur. It

was also determined that it would be in the national interest for the federal government to assist the efforts of the state and local education agencies with the educational programs for the handicapped.

To physical educators in Kentucky, P.L. 94-142 means that they must now be prepared to have the handicapped child in their classes. Educators must also have knowledge of individual handicapping conditions so they can appropriately provide the child with a physical education program. It becomes the responsibility of every teacher to understand and participate in the writing of each handicapped student's Individualized Education Program (IEP). As a result, all teachers, especially the physical education instructor, must learn to adapt their teaching styles to include special children and provide the best possible instruction for every student.

Public Law 94-142

Public Law 94-142 was enacted by the United States Congress in November, 1975. The Education for All Handicapped Children Act changed not only what was required of special education teachers but also what is required of physical education teachers. Physical educators are now responsible for the motor programs of every student in their school, even if the development of a special program is necessary.

Public Law 94-142 guarantees a free and appropriate public education to all handicapped students, as well as assuring the rights of the handicapped children and their parents will be protected. The law allows the federal government to assist

the states and localities in providing for this education. It also identifies as the federal government's responsibility the assessment and assurance of the effectiveness of efforts to educate such handicapped children.

To assure that the spirit of the law is carried out, Congress provided each handicapped child with certain assurances and guarantees. These provisions are:

1) Improved child-identification procedure;
2) A detailed timetable for each child's education;
3) Guarantee of due process: explanation of course of action, to be given in both English and the family's native language;
4) Assurance of regular parental consultation;
5) Maintenance of programs for personnel development, i.e., in-service training for teachers;
6) Assurance of education in the least restrictive environment;
7) Nondiscriminatory testing and evaluation procedures;
8) Protection of confidentiality of information;
9) Assurance of an Individualized Education Program;
10) Assurance of a free public education; and
11) Appointment of a surrogate when necessary.

Each school system has the responsibility to see that all of these provisions are carried out.

Definitions

When dealing with the implementation of P.L. 94-142, there are several basic definitions that teachers need to be aware of.

Knowledge of these definitions enables school systems and physical educators to more effectively participate in the mandated activities of P.L. 94-142. These definitions are:

"1) Free appropriate public education - is special education and related services which:

a. are provided at public expense, under public supervision and direction, without charge;

b. meet standards of the state education agency;

c. include preschool, elementary and secondary education;

d. are provided in conformity with an IEP.

2) Handicapped - are those children evaluated as being mentally retarded, hard of hearing, deaf, speech-impaired, other health-impaired, deaf-blind, multi= handicapped or as having specific learning disabilities who because of those impairments need special education and related services.

3) Special education - is specially designed instruction at no cost to parents to meet the unique needs of a handicapped child, including classroom instruction, instruction in physical education, home instruction, and instruction in hospitals and institutions. (To assure that physical education services are available to all handicapped children, Congress has specifically included physical education within the definition of special education.)

4) Least Restrictive Environment - is the environment

that provides the best learning conditions for the student with the use of supplementary aids and services.

5) Related Services - are additional services that a child needs so he/she will be able to benefit from special education. These services can include: transportation, recreation, different types of therapy, counseling, and non-academic services such as athletics, intramurals, or clubs" (Federal Register, 42-163).

At this point a comment needs to be made about the potential value of related services to the development of motor programs for the handicapped child. If used wisely, the input of professionals from the related services can be vital in designing the physical education program for such children. Since blanket medical excuses are no longer acceptable, the physical educator will have to consult the handicapped student's doctor for permission and advice about the student's physical education instruction. The physical therapist and any other therapist the child sees should be consulted for input into the student's program and a further explanation of the student's abilities and/or limitations.

Physical Education

Under P.L. 94-142, physical education is a required part of the education of any handicapped child. Physical education is defined as:

"the development of physical and motor fitness, funda-

mental motor skills and patterns, skills in aquatics, dance, individual and group games, and sports including intramurals and lifetime sports. The term also includes special physical education, adapted physical education, movement education, and motor development" (Federal Register, 42-163).

School systems must provide general physical education services, specially designed if necessary, for every handicapped child receiving a free appropriate public education. Each handicapped child must also be provided the opportunity to participate in the regular physical education program, if that program is considered the least restrictive environment, unless:

"1) the child is enrolled full time in a separate facility (the child must be provided with physical education in that facility);

2) the child needs specially designed physical education as prescribed by the child's IEP (if special physical education is prescribed by an IEP, the school system is responsible for providing these services" (Federal Register, 42-163).

Often, a handicapped student can participate in the regular physical education program with some assistance or a specialized piece of equipment. The school system is responsible for this aspect of the special education or can provide these services through other agencies and programs. If the handicapped child is enrolled in a separate facility, the school

system must insure that the child receives an appropriate physical education.

While planning a motor program to include the handicapped, physical educators must not only be able to adapt and use games and exercises appropriate for these special populations but also adapt and teach essential motor skills. These skills are a necessary aspect for the handicapped child to be able to participate in a wide variety of lifetime and leisure sports and activities. A program for such children should provide opportunity to learn and to utilize these skills.

Section 504

Section 504 of the Rehabilitation Act of 1973, also recognized as the Civil Rights Act for the Handicapped, prohibited discrimination on the basis of a handicap. The act states:

> "No otherwise qualified handicapped individual in the United States...shall, solely by reason of his handicap, be excluded from the participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance" (Austin & Powell, P. 11.19).

Section 504 affects education and physical education departments directly in two major ways. The first is that all facilities must be readily accessible to handicapped persons. School systems have a responsibility to build all of their new buildings with provisions for the handicapped. Existing schools must also be made accessible through either program or faculty considerations to all handicapped students. The second effect Section

504 has on physical education is in the area of athletics and intramurals. The act states:

> "A recipient that offers physical education courses or that operates or sponsors intercollegiate, club or intramural athletics shall provide to qualified handicapped students equal opportunities for comparable participation in these activities" (Federal Register, 42-86).

Separation of athletics is permitted under Section 504 as long as any qualified student is allowed to compete for the regular school teams. Many people are handicapped in one way or another, and often there is an existing sport in which a handicapped individual can participate. This legislation provides for the right of the handicapped person to participate on a school's regular sports team, when the individual meets the same qualifications as other participants.

Litigation

The field of adapted physical education has changed a great deal over the last fifteen years. Even before P.L. 94-142, court cases arose which facilitated the mainstreaming movement of handicapped children in the public school systems. These cases helped set legal precedent and laid essential groundwork for P.L. 94-142.

One of the most significant federal cases involved the Pennsylvania Association for Retarded Children (PARC)(1971). The decision gave the due process guidelines for the treatment

of exceptional children, which later appeared in the procedural-safeguards section of P.L. 94-142 (Howell, Kaplan, & O'Connell). The case made public education mandatory for all mentally retarded children. This action was followed by Mills vs. the Board of Education of the District of Columbia. Here, a free public education was declared the right of all handicapped children, not just the mentally retarded.

Other cases brought about changes in all areas of mainstreaming. One such case is Hobson vs. Hansen (1968). In this decision, the use of standardized tests for the purpose of placement was found to be inappropriate because they often inaccurately identified minority students as handicapped. In the case of Diana vs. State Board of Education in California (1973), it was ruled that, when testing a child to determine placement in a special class, the student's native language and cultural background cannot be ignored. The tests administered must be understood by the child, and not be culturally biased.

Literature Cited

Austin, D.R. & Powell, L.G. Resource Guide: College Instruction in Recreation for Individuals with Handicapping Conditions. (Project Inspire, Bloomington: Indiana University, 1980), p. 11.19.

Federal Register 42(163). Washington, D.C.: Department of Health, Education and Welfare (No. 163), August 1977.

Federal Register 42(86). Washington, D.C.: Department of Health, Education and Welfare, May 1977.

Howell, K.W., Kaplan, J.S., & O'Connell, C.Y. Evaluating Exceptional Children. Columbus: Charles E. Merrill, 1979.

Chapter 2

Identification, Assessment and Evaluation

Due to P.L. 94-142 school systems are now required to conduct screening of pre-school children, and the physical educator is required to conduct assessment of those referred by the screening process (McLoughlin & Lewis). There are more basic reasons for conducting assessment of children, than to complete the requirements of law, and they are professionalism and accountability. Through the assessment process, the physical education professions can answer these questions about their students:

1) What the goals and objectives are for the physical education program, class, and each individual;
2) What the specific needs are for each student in the areas of physical fitness, motor development, motor skills, and skills for participating in group and individual games;
3) What the progress of the classes is toward their goals and objectives during and after the period of instruction;
4) What the progress of each individual is toward his/her individual needs and the program goals and objectives.

This chapter is divided into three sections: identification, screening, and assessment. The components of assessment and screening that the physical educator will be concerned with will include the following:

1) Perceptual-motor
   a) Balance (static-dynamic)
   b) Body image

c) Laterality

d) Directionality

e) Spatial awareness

f) Eye-hand coordination

g) Eye-foot coordination

h) Fine-motor control

i) Visual discrimination

j) Auditory discrimination

k) Tactile discrimination

2) Fundamental movement patterns

a) Locomotor (walk-run-jump-hop-leap-slide-gallop-skip)

b) Non-locomotor (bend-stretch-pull-push-lift-swing-sway-turn-twist)

c) Manipulative skills (catch-block-kick-throw-bounce-strike)

3) Physical fitness

a) Agility and coordination

b) Flexibility

c) Strength

d) Muscular endurance

e) Cardiovascular endurance

4) Skilled movements

a) Simple adaptive

b) Compound adaptive

c) Complex adaptive

5) Non-discursive communication

   a) Expressive movement (posture and carriage)

   b) Interpretive movement (æsthetic movement and creative movement)

Identification of the Handicapped Learner

Of all the issues associated with identifying the motor disability, none has so much impact as that of early identification and intervention (Chinn & Drew; Fallen & McGovern; Frankenburg & Dodds; Pangrazi & Daver). The concept that people have their greatest capacity for learning early in life is one of the basic reasons for early detection (Pangrazi, et al.). In some cases the final determination of the handicapped condition can be substantially reduced if treatment is implemented early enough. Take the example of a Learning Disabled child whose detection is critical since normal development can be closely achieved if proper attention is given as quickly as possible. By a delay, the impairment has the potential to become a permanent disability. In other cases, the effects of a handicapping condition may be limited if action is taken early enough. Children who are termed high risk for developmental retardation are examples where the effects can be lessened with early action. With children more severely handicapped, the importance of early identification is for the children to develop to their fullest potential and to learn to compensate for the handicapping condition where appropriate. The early identification and preparation will help the children in their adaptation to the school environment and reduce the possibility of school failure and emotional trauma (Chinn, et al.).

There is an integral part of Public Law 94-142 providing for special services to handicapped children from ages three

to five. How these services are to be supplied and implemented is somewhat vague, but funds can be allocated separately and independently from the regular school program (Pangrazi, et al.). Through vague in areas, one point that has been identified is that schools are obligated to have large-scale identification systems to locate and serve children with exceptionalities (Lombard).

Identification of a motor deficiency may be made by any person who comes into contact with the child during the early years of development; very often this would be the physical educator. Within their specific spheres of knowledge, any person has the opportunity to pinpoint any deviation from normal childhood development. However, the educator has a unique vantage point in the detection of children with disabilities. In most cases, educators have the advantage of regular and daily observations of the child. Naturally, they will have the expertise to pinpoint the motor deficiencies (Fallen, et al.).

Physical educators in identifying handicapped children need to consider these subtle observations: children with postural problems, children with low motor development or motor problems, and children whose levels of physical fitness are low due to lack of ability or opportunity for adequate motor activity (Pangrazi, et al.). Children more severely handicapped are usually identified before entering the school system. If measures are not taken at the earliest possible time, the individual can become more accustomed to the disability and less responsive to helpful measures.

Screening

Screening is performed for two reasons: to identify students who may have problems requiring special educational services, and to identify those characteristics to be measured. Screening is an aspect of assessment, but for the purpose of understanding the distinct contribution to the education of the handicapped, it has been separated.

Definition of Screening

Screening could be compared to the process of size sorting of oranges. The oranges are run across a screen with select-size holes which permit the smaller oranges to fall through, while the larger oranges which do not pass through are used for special Christmas packages. Another screen with slightly smaller holes is used next, with those not falling through going to your grocer and those falling through being used to make freshly squeezed orange juice. Thus the analogy tells us screening tests sort out those who are different (Meier).

Public Law 94-142 requires each state to identify students who may be handicapped and need special instruction. The best screening procedure used should be time-efficient, reliable, and valid in identifying students most in need of assistance.

Screening Devices

These are screening tests that may be used by the physical educator to help identify motor problems. Though not all the screening tests available, these are some of the more popular.

Denver Developmental Screening Test (DDST). The Denver Developmental Screening Test assesses children from birth to six years of age. Test components include (1) gross-motor, (2) language, (3) fine-motor adaptive, and (4) personal-social. Norms have been developed based on 1036 Denver children between 2 and 6.8 years. Although some materials are needed, the test may be administered by individuals with no special training. The entire test is never administered; instead, items are selected according to test purposes and performance (Fallen, et al.; Johnson; Winnick).

Frankenburg, William K., and Dodds, Josiah B.; Ladoca Project and Publishing Foundation.

Address: East 51st Avenue and Lincoln Street
Denver, Colorado 80216

Cost: $7.00 for the kit; $2.00 for 100 test forms; $4.00 for reference manual; $6.00 for manual workbook.

The Bruininks-Oseretsky Test of Motor Proficiency (short form). The Bruininks-Oseretsky Test was developed to screen both gross-motor and fine-motor development of children four to eighteen. The short form of the test is designed for screening, and a long form for detailed assessment. Test components include (1) running speed and agility, (2) balance, (3) bilateral coordination,

(4) strength, (5) upper-limb coordination, (6) response speed, (7) visual-motor control, and (8) upper-limb speed and dexterity. Normative data have been developed based upon a population of 765 children. The short form requires approximately twenty minutes for an individual and allows the possibility to give gross-motor or only fine-motor assessments. The test is easy to administer with a well written manual and no special equipment other than what is contained in the test kit (Fallen, et al.; Johnson).

Bruininks, R.; The Bruininks-Oseretsky Test of Motor Proficiency. Circle Pines, Minnesota. American Guidance Service, Inc.

Address: Publishers' Building
Circle Pines, Minnesota 55014

Cost: $150 for complete kit, $5.50 for package of 25 response forms, $4.50 for package of 25 student booklets.

Learning Accomplishment Profile and the Infant (LAP). The Learning Accomplishment Profile is a test developed for use with children who may be experiencing developmental lags and assesses the areas of gross-motor, fine-motor, social skills, self-help skills, language, and cognition. The LAP is designed for children aged 0 to 6 years but may

be used at higher levels in the elementary school with some children. The format of the LAP is a developmental checklist which enables the teacher to assess the child in the classroom and within the framework of daily activities. It is easily administered to an individual with the time varying, dependent upon the observational activities (Johnson).

Sanford, Anne; Learning Accomplishment Profile (LAP), Kaplan School Supply Corporation.

Address: 600 Jonestown Road
Winston-Salem, North Carolina 27103

Cost: $2.50 for the manual; $10.00 for learning activities, $6.75 for planning guide, $4.50 for working with families, $3.00 for the LAP for Infants, $5.00 for Head Start resource guide, $2.00 for Public School Resource Guide.

The Purdue Perceptual-Motor Survey. The Purdue Perceptual-Motor Survey is a test developed to observe perceptual-motor behaviors and specifically screen balance and posture, body image and differentiation, perceptual-motor match, ocular control, and form perception. The test addresses ages six to ten years. Some materials are needed, and the scoring is somewhat subjective

but easy to administer and interpret. The test is administered to an individual and requires approximately one hour (Winnick).

Roach, Eugene G., and Kephart, Newell; The Purdue Perceptual-Motor Survey, Charles E. Merrill Publishing Co.

Address: 1300 Alum Creek Drive
Columbus, Ohio 43216

Cost: $10.50 for one packet of 25 record forms;
$8.95 for manual.

Assessment and Evaluation

Now that identification of children with possible motor problems has been accomplished and their needs identified, an in-depth assessment should be made so that the educator can accurately evaluate individual strengths and weaknesses and make initial decisions about program development. Such is the case of a swimming instructor teaching children the proper breathing technique. Improper breathing may be due to a number of specific factors which include (1) improper timing of the head movements, (2) improper head position, (3) improper inhalation-exhalation, and (4) fear of the water. Where screening will determine that a breathing problem exists, the in-depth assessment will determine the exact problem and extent of the breathing difficulty. In some cases, what may have been identified as a problem through the screening and identification process may turn out to be non-existent after a careful examination through the assessment process and careful evaluations. There are two types of assessment: formal and informal.

Purpose of Assessment

The information gathered through the assessment process is used to identify and direct students into needed programs and to help determine areas or skills in which the student may need instruction. These can then be reflected in the Individualized Educational Program (IEP). More specifically, the four main reasons for education assessment are (1) accounta-

bility identifying and determining placement, (2) planning programs, (3) monitoring students' progress, and (4) evaluating the program (McLoughlin & Lewis).

Determining placement. Children who through assessment have been found to have motor problems need specialized instruction. Where the child gets this instruction, whether it is in the regular physical education class or in a special class, will be determined by the physical education program goals and input from the student's other teachers. It is important for the physical educator to realize that he cannot automatically evaluate children based on intellectual assessment because often there is little relationship between intellectual ability and motor ability. A child who comes into the physical education class as EMR or with a learning disability may perform well above average physically. It might also be pointed out that the opposite can also be true. Some average students, academically, may have distinct motor deficiencies which may indicate special-program participation.

Program planning. Data from motor assessments should be used to help plan the physical educator's program or, in the case of a student receiving special educational services, in the development of the IEP. Annual goals and short-term objectives are chosen on the basis of a prioritized list of needs. The IEP indicates what the goals and objectives will be and who will provide the instruction as well as where and for how long these services will be offered. The physical educator using the assessment should be part of this process.

Monitoring process. Information is gathered about the immediate effects of instruction and the day-to-day gains made by the student. A variety of procedures can be used to document the level and kind of achievement made by the student. Of particular interest is any information that could be used to make necessary modifications in the program or in the placement of the child.

Evaluating the program. Public Law 94-142 requires at least an annual review of all IEP's for special education students. The staff and parents examine the results of the program over the past year and decide if the special educational services should be continued as they are, modified, or eliminated. In addition to the continual monitoring of the program, this annual review requires information about change in performance from IEP inception. Assessment for the physical educator can also be used to justify adapted physical education programs or regular class placement.

Formal Assessment

The educator should look for a test that (1) is economical in time, materials, and equipment, (2) provides reliable results, (3) is valid (tests what it is supposed to test), (4) is relevant to the physical educator (has components which need to be tested), and (5) provides understandable results, either norm-referenced or criterion-referenced.

With the exception of physical-fitness tests, a majority of the motor tests are administered to individual students, not large groups. Because the test items are complex and

in depth, large groups are not usually considered practical. Listed are a number of tests which might be recommended. The following are not the only tests available but are perhaps some of the most widely known motor-proficiency and physical-fitness tests for children.

Motor Tests

The Bruinink-Oseretsky Test of Motor Proficiency (long form). The Bruinink-Oseretsky Test was developed to test both gross-motor and fine-motor development of children four to sixteen. The short form previously mentioned is designed for screening purposes, the long form for detailed assessment. Test components include: (1) running speed and agility, (2) balance, (3) bilateral coordination, (4) strength, (5) upper-limb coordination, (6) response speed, (7) visual-motor control, and (8) upper-limb speed and dexterity. Norm references have been developed based on a subject population of 765 children. The long form requires approximately 60 minutes for an individual but allows the possibility of giving gross-motor or only fine-motor assessment. The test is easy to administer with a well written manual and no special equipment (Fallen, et al.; Johnson).

Bruininks, R.; The Bruininks-Oseretsky Test of Motor Proficiency. Circle Pines, Minn. American Guidance Service, Inc.

Address: Publishers' Building
Circle Pines, Minnesota 55014

Cost: $150.00 for complete kit, $5.50 for package of 25 response forms, $4.50 for package of 25 student booklets.

Frostig Movement Skills Test Battery. The Frostig Battery was developed to assess children aged six to twelve years. The test's twelve components include: (1) bilateral eye-hand coordination and dexterity, (2) unilateral coordination involving motor sequencing, (3) eye-hand and fine-motor coordination, (4) visual-motor coordination involving aiming and accuracy, (5) ability to flex the spine, (6) leg strength, (7) running speed and ability to make quick stops, changes of direction, and changes of body position, (8) speed and agility in changing body positions from lying to standing position, (9) abdominal muscle strength, (10) dynamic balance, (11) static balance, and (12) arm and shoulder strength. Norms have been developed based on a standardization sample of 744 elementary school children. This group test requires minimal equipment and may be administered in approximately 90 minutes (Winnick).

This test is available from Consulting Psychologists Press, 577 College Avenue, Palo Alto, California 94306.

Move-Grow-Learn Movement Skills Survey. The Move-Grow-Learn Survey was developed to assist classroom teachers, physical educators, school psychologists, and

other school personnel in evaluating select aspects of motor development in children. Assessment is based on observations of the child in the classroom, playground, and movement activities. Components of the survey include (1) coordination and rhythm (gross-motor, fine-motor, and eye-motor), (2) agility, (3) flexibility, (4) strength, (5) speed, (6) balance (static, dynamic and object), (7) endurance, and (8) body awareness. Since activities may vary, developmental norms are not provided by age level. Children are rated as severely impaired, mildly impaired, adequate, good, or excellent. No special equipment is needed (Winnick).

Orpet, R.E., and T.L. Heustis; Move-Grow-Learn Movement Skills Survey. Chicago, Illinois, Follett Publishing Company.

Purdue Perceptual-Motor Survey. The Purdue Perceptual-Motor Survey was designed to assess normal children aged six to ten and to assess older children who are mentally retarded. The test was developed to observe perceptual-motor behaviors and specifically to assess balance and posture, body image and differentiation, perceptual-motor match, ocular control and form perception. Some materials are needed, and scoring is somewhat subjective but easy to administer and interpret. The test

is administered to an individual and requires approximately one hour. This survey can also be used as a screening device (Johnson; Winnick).

Roach, Eugene G., and Kephart, Newell. The Purdue Perceptual-Motor Survey, Charles E. Merrell Publishing Co.

Address: 1300 Alum Creek Drive
Columbus, Ohio 43216

Cost: $10.50 for one packet of 25 record forms;
$8.95 for manual.

Fitness Tests

AAHPER Youth Fitness Test. The AAHPER Fitness Test was developed to test fitness in children aged nine to seventeen. A number of methods can be used to accommodate a handicapped student, including:

1) using mental age rather than chronological age;
2) reducing the number of test items which must be passed;
3) lowering or raising percentile standards according to ability levels of the individual participants;
4) eliminating test items which are obviously unfair so that each participant has a chance to succeed;
5) grouping activities into categories according to fitness characteristics (running, endurance, power), and structuring those so that individuals have to attain a minimum

standard in so many items from each category;

6) using improvement for the basis of awards;

7) substituting activities and test items;

8) using combinations of the above.

Components of the AAHPER test include (1) arm and shoulder girdle strength, (2) efficiency of abdominal and hip flexus muscles, (3) speed and agility, (4) explosive muscular power, (5) speed, and (6) cardiovascular efficiency. The 1975 national norms were based on 9200 tested boys and girls aged nine to seventeen. The test can be administered to a class in approximately 90 minutes with a minimum of equipment. Awards are available for various levels of achievement (Hunsicker and Reiff).

Hunsicker, Paul, and Guy G. Reiff; AAHPER Youth Fitness Test Manual (revised 1976 edition). Washington, D.C.: American Alliance for Health Physical Education and Recreation, 1976. AAHPER Publication sales 1201 16th Street, N.W., Washington, D.C. 20036.

AAHPER Special Fitness Test for Mildly Mentally Retarded Persons. The AAHPER Special Fitness Test was developed to assess fitness in educable mentally retarded students ages eight to eighteen. Components of the test include (1) arm and shoulder girdle strength, (2) efficiency of abdominal and hip flexor muscles, (3) speed and agility, (4) ex-

plosive muscular power, (5) speed, (6) skill and coordination, (7) cardiovascular efficiency. Norms have been developed based on 4200 educable mentally retarded boys and girls and awards are available for various levels of achievement classes. Test administration requires about 90 minutes with a minimum of equipment (AAHPER).

Manuals may be obtained through AAHPER Public Sales, 1201 16th Street N.W., Washington, D.C. 20036.

AAHPER Special Fitness Test for Moderately Mentally Retarded Persons. This AAHPER Special Fitness Test was developed to assess motor fitness in trainable mentally retarded children aged six to twenty. Components include (1) arm and shoulder girdle strength, (2) efficiency of abdominal and hip flexor muscles, (3) explosive muscular power, (4) skill and coordination, (5) speed, and (6) cardiovascular efficiency. Norms have been developed based on 1097 students from age six to nineteen and awards are available. Class test administration requires approximately 90 minutes with a minimum of equipment (Johnson & Londeree).

The test manual may be obtained through AAHPER Publication Sales, 1210 Sixteenth Street, N.W., Washington, D.C. 20036.

Fait Physical Fitness Battery for Mentally Retarded Children. The Fait Physical Fitness Battery was developed to assess physical fitness of educable and medium-high trainable retarded children aged nine to twenty. Components for the test include (1) speed, (2) static muscular endurance, (3) dynamic muscular strength, (4) balance (static), (5) agility, and (6) cardiorespiratory endurance. Norms have been developed for TMR and EMR within the 9-12, 13-16, and 17-20 year old age groups. The test may be administered to a class in approximately one hour with very little equipment (Winnick).

Fait, Hollis, F.; Special Physical Education: Adapted, Corrective, Developmental. Philadelphia: W.B. Saunders Co., 1972.

Informal Assessment

Informal assessment is that element of assessment during which teachers evaluate the student's comprehension and performance of curriculum and activities during normal class settings (McLoughlin, et al.). Much of the educational assessment done today is of the informal nature. This helps the instructor evaluate the student's status and progress, and yields valuable information for determining the current educational level of the child.

The physical educator is continually assessing students, and there is no other educator as well prepared to assess the motor development and skills. Though informal assessment is

used continuously during class, more concern needs to be shown for being systematic and making adequate documentation of observations. Due to the school setting and its numerous sessions, the educator has the unique ability and advantage to observe and record the child's behavior on a regular basis. Now due to P.L. 94-142 educators are required to use informal assessment on referred pupils in a familiar surrounding as a part of the entire assessment procedure.

Informal assessment can be made during class activities or play, or during formal assessment evaluating such qualities as distractibility, apprehension, and ability to follow directions. Fallen, et al. have described several distinct advantages of using observational techniques which include:

1) Observations measure behavior in the child's natural settings, rather than the artificial settings of an examination room.
2) The observer's attention is focused on the child's actual behavior, not on the results of a test.
3) The observation removes the element of isolation inherent in formal assessment. A child's behavior is observed in context and factors compounding the child's true disability may be more readily apparent. In the case of determining a swimmer's breathing pattern with formal assessment, children could be assessed as having great difficulty yet be very competent if the assessment took place in shallow water where they had less fear. Informal assessment would

allow observation of the child in a number of pool depths within the swimming facility.

4) Observation and subsequent educational planning may best rely on the intuition and judgment of the experienced educator.

5) The observations can be used to effect immediate change in the program: such as the case of a child reporting to class with a sprained ankle. The child is then programmed into an activity which he can participate in safely.

6) The instructor sees behavior over a period of time even if it's not used as part of the assessment procedure:

Informal assessment may be accomplished by a variety of observational techniques which include: (1) anecdotal records, (2) checklists, (3) rating scales, and (4) participation charts.

Anecdotal Records.

The anecdotal records are reports of informal observations of a child and certain aspects of behavior. The record will determine the how, who, when, what, and where of the child's behavior. By recording the unexpected behaviors or incidents in several settings and at several different times, the educator is able to determine patterns of behavior and thus make a more precise assessment (Fallen).

A sample anecdotal record appears at the top of the following page.

(How)

ANECDOTAL RECORD

(Who) (When)
Learner: Hank Edgerton Date: 2/3/81 Time: 2:30 p.m.

(Where)
Place: Gymnasium Observer: R. S. Mattingly

(What)
Incident:

Class was participating in gymnastics. Hank declined to participate. Asked what the problem was, Hank said he had a headache. After being sent to the nurse, Hank returned to the class and participated reluctantly.

Checklist.

The checklist is composed of a list of behaviors or components of objectives which the instructor wishes to observe. For each of the behaviors there is a place to indicate whether or not the behavior was observed. The fact that the behaviors or skills to be observed are predetermined makes the checklist distinctively different from anecdotal records.

Skill Objective

PUNT

Components

A. Horizontal velocity _____

B. Eye-to-ball contact _____

C. Correct foot-plant distance _____

D. Sequential-force application _____

First medial rotation _____

Second upper-leg flexion _____

Third lower-leg extension _____

E. Reverse total-body rotation _____

F. Foot contact with the call _____

G. Follow-through _____

Checklists are used when the behaviors are known in advance, and when there is no need to know frequency or quality of the performance. The advantages to a checklist are that the behavior can be recorded quickly and, since the behavior is written down, it will not be overlooked. For the checklist to be a valuable assessment tool, it must be broken down enough to afford valuable results. If the instructor is trying to determine the status of the student at the beginning of the program, a general checklist is adequate. If the instructor is determining the progress of the student, the checklist must be broken down further so as to not evaluate more than a single component at one time. An example in the last checklist is component (D), which could be broken down into: (1) medial rotation, (2) upper-leg flexion, (3) lower-leg extension, in that sequential order.

Rating Scale.

The rating scale is an extension of the checklist where frequency or quality of the characteristic is evaluated. The observer is required to make a judgment about the performance.

Skill Objective

OVERHAND THROW

A. Hand passes over shoulder _____

B. Eye contact on target _____

C. Opposite foot planted forward _____

D. Sequential-force application _____

1. Trunk flexion _____
2. Medial rotation _____
3. Upper-arm flexion _____
4. Lower-arm extension _____
5. Wrist flexion _____

E. Weight transfer from back foot to front _____

F. Follow-through _____

P - Poor

F - Fair

G - Good

E - Excellent

Participation chart.

A participation chart is used when a number of students are being observed simultaneously and when their participation in the activity is the purpose for making the observation. This may be a very valuable tool in determining the effectiveness of the placement of handicapped children to the regular physical education class.

Class: 3rd grade Date: 1/12/76

Activity: P.E. free play

Observer: J. Miller

(The remainder of the chart appears on the following page.)

Name	Actively participates in free play				
	Mon	Tue	Wed	Thu	Fri
M. Cook	/	/	/	/	/
Z. Rich	/	/	/	/	/
P. Wac	/	/		/	/
M. Link	/	/	/	/	/
A. Toth	/	/	/		/
I. Green			/		
M. Nooley	/	/	/	/	/

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Chinn, P.C., C.J. Drew, & D.R. Logan. Mental Retardation: A Life Cycle Approach. St. Louis: The C.V. Mosby Company, 1979.

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Hunsicker, P., & G.G. Reiff. AAHPER Youth Fitness Test Manual. Washington, D.C.: American Alliance for Health, Physical Education, and Recreation, 1976.

Johnson, H.W. Preschool Test Descriptions, Test Matrix, and Correlated Test Descriptors. Springfield, Illinois: Charles C. Thomas, 1979.

Johnson, L. & Londeree. Motor Fitness Testing Manual for the Moderately Mentally Retarded. Washington, D.C.: American Alliance for Health, Physical Education, and Recreation, 1976.

Lombard, T.J. "A Lesson for Every State from Minnesota's Preschool Screening Program." Journal of School Health, 1980, 50-8, pp. 459-462.

McLoughlin, J.A., & R.B. Lewis. Assessing Special Students. Columbus: Charles E. Merrill Publishing Co., 1981.

Meier, J. Screening and Assessment of Young Children at Developmental Risk. Report of the President's Committee on Mental Retardation No. (OS) 73-90. Washington, D.C.: U.S. Government Printing Office, 1973.

Pangrazi, R.P., & V.P. Daver. Movement in Early Childhood and Primary Education. Minneapolis, Minnesota: Burgess Publishing Company, 1981.

Winnick, J.P. Early Movement Experiences and Development Habilitation and Remediation. Philadelphia: W.B. Saunders Company, 1979.

Chapter 3

Physical Education and the IEP

An Individualized Educational Program (IEP) should be developed for every handicapped child in a school system who is in need of special education. An IEP covers only the part of the child's education for which he/she will need special services or a program specially designed. The IEP is an extension of the procedural protections the law gives to every handicapped child and his/her parents and is a sound educational practice which promotes accountability of the school system and its teachers. An additional benefit is the encouraged communication between the child's parents and the school. The IEP is part of a process which includes assessing the student and placing him/her in the most appropriate educational program. This process also enables the teacher to have a better understanding of the child's educational level and potential. An IEP enables the school to know what services the parents expect to be provided, and the parents will know how the school intends to educate their child.

Writing an IEP

There are certain steps usually followed when writing an IEP. The first step is for the child in question to be referred for testing. This referral usually comes from the child's teacher. Next, the child undergoes preliminary diagnostic screening to specify the type of testing to be done. Comprehensive testing on an individual basis is then administered to the child. From here, the School Based Admissions and Review Committee (SBARC) evaluates the results of the

assessment and writes an IEP for that child. The IEP must be written by October 1st every school year, or 30 days after testing if extensive testing is done or if the student is new to the school district.

The School Based Admissions and Review Committee (SBARC) consists of the following people:

1) Principal of the school.
2) Referring teacher.
3) Child's teacher.

} Can be the same person

4) Resource and/or special education teacher.
5) Individuals who administer the tests for assessment of the child.
6) Child's parents.
7) Child, when appropriate.
8) Other individuals, when appropriate.

The primary function of this committee is to write an IEP for the student. It is the school's responsibility to ensure that all concerned individuals are provided an opportunity to be present at all discussions concerning the IEP. Before the committee begins its work, a decision must be made on the method to be used for decision-making, roles of each committee member, and timelines for planning and placement. Each member of the committee except the parents should also bring to the meeting a rough copy of the IEP. This saves the time of the committee as a whole and is an excellent way to compare ideas.

The members of the SBARC are the people who will decide the type of physical education placement and the type of

services the child will require. The committee should have the results of any motor testing or assessment before their meeting. "The rules and regulations encourage schools to assess the child in motor ability (sec.121a.532)" (Dunn). The SBARC can obtain assessment information from a variety of sources including school records, teacher observations, norm-referenced tests, and criterion-referenced tests. The I CAN, Sigma Scale, and the Cherokee County material are examples of criterion-referenced tests from which an assessment of the child's motor ability and fitness level may be made. It is advisable for a physical educator to be included on the SBARC so he/she can advise the committee on the goals and objectives required in regular-class placements as well as resources available for special classes. The physical educator can also help develop a realistic timetable for accomplishing the child's goals and objectives and give some suggestions as to how the goals can be achieved.

Contents of an IEP

Once an IEP is written, it can be divided into eight major sections. Each IEP written should include:

1) A summary of the child's present level of education, or what the child can do now.
2) A statement of annual goals, or what is desired for the child to be able to do at the end of the year.
3) A statement of short-term objectives, or what the child will have to learn in order to achieve the annual goal.

4) A list of specific special educational and related services which will be provided to meet the annual goals and short-term objectives, or what outside services might facilitate the acquisition of short-term objectives.

5) A statement of when the services will start and the duration of the services.

6) A statement of evaluation criteria and an annual evaluation to determine that instructional objectives are being met, or what the child must be able to do to go from one short-term objective to the next.

7) A statement of the amount of time the child will be in regular education, which is to include physical education if regular physical education placement is deemed appropriate.

8) A list of the individuals who are responsible for the implementation of the IEP or who will teach each short-term objective.

The summary of the present level of education should include the child's strengths as well as weaknesses. When determining the strengths, what the child likes to do, what skills the child has mastered, and in which areas the child scored the highest on the assessment tests, should be considered. In determination of the child's weaknesses, considerations should include such things as what behaviors might hinder progress and what needs the child has for special or related services.

Annual Goals

The annual goals of an IEP are very important because they provide direction and communicate the particular areas of need. The annual goals describe the terminal behavior to be achieved and are broad in their descriptions. If physical education is one of the areas included in the IEP, the annual goals provide the general areas to be addressed in the child's program. They give the physical educator direction and provide for greater accountability at the end of the year. The annual goals are also the basis for the short-term instructional objectives.

Certain questions should be asked when developing annual goals. What are appropriate goals for meeting the child's needs as indicated by the present educational level of the child, and what areas of instruction does the child need assistance with? While the annual goals are being developed, they can be prioritized. To prioritize the annual goals, the committee should consider the appropriate developmental sequences, the behaviors that appear to be most modifiable, and the concerns of the parents or teachers. Examples of annual goals:

1) The student will improve physical fitness through improved strength.
2) The student will improve fundamental motor skills: running and leaping.

Short-Term Instructional Objectives

Short-term objectives are developed for each annual goal. Short-term objectives are based on the prerequisite skills

the child will need to make progress in achieving the annual goal. The skills should be measurable and an intermediate step between the present level of performance and the annual goal. The short-term objective provides the framework from which daily lesson plans are determined. Short-term objectives can be developed using an "A, B, C, D" model. "A" represents the "actor", or the child to learn the behavior. "B" is the specific behavior or skill to be demonstrated or developed. "C" should represent the conditions under which the behavior will be performed. "D" is the criterion for success. These objectives provide periodic assessment of the child's progress. Examples of short-term objectives (relating to the sample annual goals):

1) The student will be able to increase by five the number of sit-ups done.
2) The student will be able to increase by five the number of continuous sit-ups done.
3) The student will be able to run without assistance.
4) The student will be able to run 100 yards without assistance.
5) The student will be able to leap without assistance.
6) The student will be able to leap over a beam 6" - 8" off the ground, without assistance.

Least Restrictive Environment

Most educators agree a child should be educated in the least restrictive environment. This ensures that the handicapped child will be educated to the maximum extent appropriate

with the non-handicapped children. Handicapped children should be educated in special classes or in a separate facility only when participation in a regular class would not be feasible even with supplementary aids or services.

The concept of least restrictive environment does not mean that all handicapped children should be placed in a regular class, nor does it mean that all handicapped children should be in special classes. Children should be assessed individually, with their strengths and weaknesses considered when determining their placement. Even then there are many different placement options for the child to receive the best education possible. The placement options for physical education are:

"1) regular physical education
2) regular physical education with consultative assistance
3) regular physical education with assistance
4) regular physical education plus part-time special
5) full-time special class
6) full-time special school" (Dunn, p. 11).

These options provide a full range of placements from regular class to special or adapted physical education. Mainstreaming is a result of the child's placement in the least restrictive environment. Guidelines that should be used are that:

"Each public agency shall insure:

1) That to the maximum extent appropriate, handicapped children, including children in public or private institutions or other care facilities, are educated with children who are not handicapped, and

2) That special classes, separate schooling or other removal of handicapped children from the regular educational environment occurs only when the nature or severity of the handicap is such that education in regular classes with the use of supplementary aids and services cannot be achieved satisfactorily" (Federal Register, 42-163).

Due Process

Due process is a procedure which seeks to ensure the fairness of all education decisions made about a child and the accountability of those persons (parents and educators) making the decisions. The procedural safeguards include:

"1) the right to examine all records related to referral
2) the right to examine the procedures and the test to be used in the evaluation
3) the right to be fully informed of the evaluation results
4) the right to obtain an outside evaluation at your expense
5) the right to file a written request for a hearing to review the school's intent to conduct an evaluation
6) the right to prior notice: parent consent (your child's educational status will not be changed without your knowledge)
7) the right to an impartial due process hearing
8) the right to be placed in the least restrictive environment

9) the right to a continuum of alternative placement and non-academic settings" (Project MOBILITEE).

Only the child's parents or the school district can initiate a due process hearing. The hearing takes place within 45 days of the request for such a hearing. The reason for a due process hearing is a lack of agreement on a child's identification/non-identification for special education, the evaluation used to make the decision of the child's special needs, and/or the placement of that child. A due process hearing can settle only the disagreement brought before the hearing officer. The hearing officer cannot make decisions on other matters concerning the child's education.

After a due process hearing, if either the parents or the school district is still not satisfied with the decision, an appeal to the Exceptional Persons Appeal Board is possible. This appeal is within 14 days after the due process hearing. Once this board has heard the appeal, the only alternative for those who still disagree with the decision is to puruse the matter in federal court.

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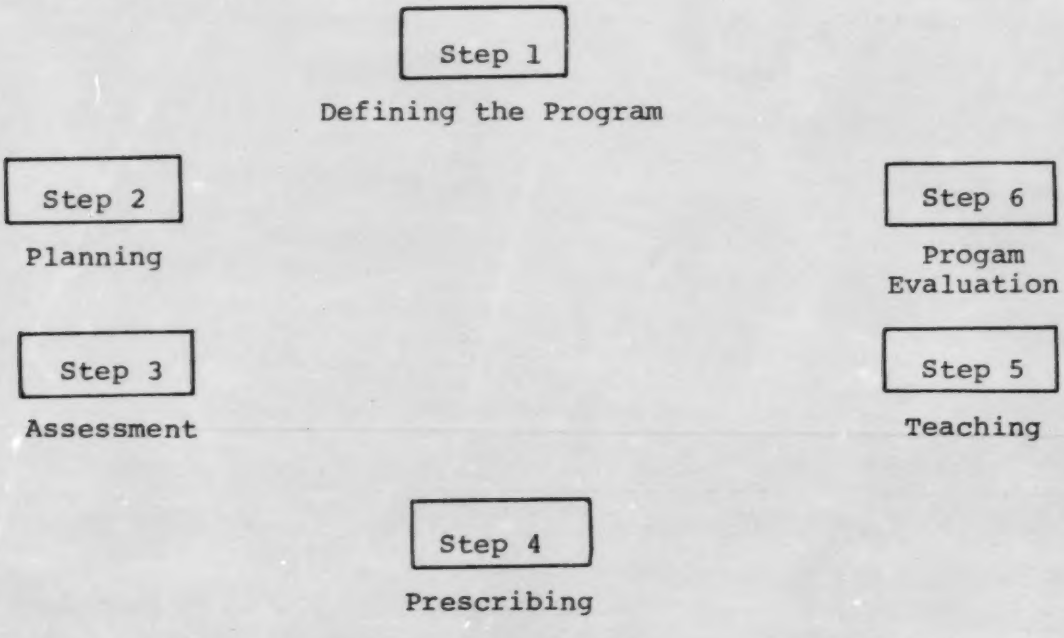
Federal Register 42-164. Education of Handicapped Children: Implementation of Part 3 of the Education of Handicapped Act, Section 121a.550(6)(1 and 2), 1977.

Project MOBILITEE. Hopewell Special Education Regional Resource Center: Report of Adapted Physical Education Developmental Project. Hillsboro, 1980, pp. 32, 39.

Chapter 4

Prescriptive Teaching

"Perhaps one irrefutable characteristic attributed to children with certain handicaps is their wide variability" (Vance, p. 291) of skills and behavior even when it's within one specific classification such as LD, EMH. This fact precludes a rigid program where the instructor can assume at what level to begin an individual's course content, what the individual's progress will be, or how best to present the information and skills. Every student enters the program with certain experiences, special needs, special interests, and at different levels. Participants must be guided into activities on the basis of their personal needs and characteristics. To accomplish this feat and to fulfill the intent of federal regulations, the physical educator needs to develop a highly organized educational plan. One approach is diagnostic-prescriptive teaching, and the steps in this chapter as described by Wessel include:



Diagnostic-prescriptive teaching is an attempt to identify the most effective instructional strategies and levels for children who differ on any number of variables (Ysseldyke & Salvial). Taching under this plan focuses on assessing the student's performance level, prescribing instruction, teaching to the objectives, and finally modifying instruction based on continuous monitoring and evaluation during instruction. Each student is taught according to his/her strengths and weaknesses, at a pace that meets each individual's needs. Ysseldyk, et al. state that effective diagnostic-prescriptive teaching rests on four basic assumptions:

1) A child will enter a teaching situation with certain strengths and weaknesses;
2) These strengths and weaknesses are related to the course objectives;
3) These strengths and weaknesses can be assessed reliably and validly;
4) There are well identified links between these strengths and weaknesses and the effectiveness of instruction.

Defining the Program

The physical educator should have a vast background of information for determining the program. This information includes: past experience, course content guidelines set down by the school district, help from other instructors, parents, school administrators, supportive school personnel, the student, related tests, and knowledge of the available facili-

ties and equipment. If the student has been referred, an IEP and the assessment devices used to determine placement should help in development of the program.

State the Program Goals

The program goals can be relatively few but should be carefully thought out. The goals should be consistent with the goals of the: home, school, and community, physical education profession, student's needs, and philosophy of the physical education program at the individual's school. These goals should suggest the content that will be taught, the student outcome, and must be able to measure and determine instruction and program success.

State the Skill Objectives

The skill objectives must be broken down into their smallest components in order to allow students to attain each goal. They must be stated in specific, measurable, behavioral terms. Most important, the skill objective must be essential to at least one of the program goals. Skill objectives can be obtained either by the instructor's expert knowledge of the curriculum and specific skills or through curriculum and skill resource materials. The skill objective should include: the intent of the instruction, the sequence of instruction, and criteria for determining mastery of the skill and skill components.

Determine the Program Level for Each Goal

The instructor needs to estimate at what level each skill

needs to be presented. It is important for the instructor to include enough objectives to provide adequate programming for all students with the realization that some will progress faster or more slowly than others. Emphasis should be placed on an area in which students are less proficient, but never to the exclusion of other goal areas. A balanced program will: facilitate the acquisition of skills commensurate with the child's development, prepare him/her for future social and leisure-time activities, provide maintenance of health and fitness, and foster success.

Determine Instructional Time

During the instructional year, the physical educator has only a limited number of hours to work with his student, which limits the objectives that can be accomplished. The amount of time to complete each objective needs to be estimated and the total time of all the objectives determined. If the objective's time is greater than the amount of time the instructor has programmed with that individual or class, the instructor either needs to arrange for more time or must determine his objective priorities.

Planning

Most teachers will agree that good teaching is the result of careful planning. Planning is nothing more than determining a plan of action to meet the goals and objectives of the program. The first step in determining a program is to consider the alternatives. Just as a traveler going from Los Angeles to Hawaii must decide on a particular mode of transportation

which cannot include traveling by car, an educator who has specific objectives in mind must give considerable thought as to the method of reaching his objectives. No single approach works for all teachers, nor will a single teacher necessarily use the same approach with different classes. Two teachers might choose different techniques to achieve the same teaching objective, or the same teacher may use different methods at different times depending upon the situation. Such factors as teacher's mastery of the subject material, degree of confidence, experience with children, the child's educational level, type of handicap, facilities and equipment, and staff, will all affect not only the type of plans used but also the intensity of planning necessary for success (Funk & Olberg).

Yearly Planning

The physical educator needs to decide what skill objectives will be taught at what period of the year and whether it is best taught in a short bloc, over a long period of time, or maybe even through the entire instructional year. He must consider the nature of the skills and the learning styles of each of his students. The physical educator also needs to determine the amount of the class period the objective will consume. Other factors the instructor needs to be aware of are: relationship among the objectives, seasonal objectives, compatibility of objectives, and availability of equipment and facilities.

Monthly Planning

Games and activities need to be identified that fulfill the requirements of the skill objectives and needs of the child. How much time for each class period needs to be determined for each of the objectives specified for that month from the yearly plan. Action words used in obtaining the instructor's desired results need to be identified, equipment and materials need to be determined and obtained, and the instructor needs to set up lesson plans for individualized learning for each student.

Assessment

Knowledge of I.Q., motor development tests, physical fitness tests, and any other tests derived from the identification and placement process, while interesting and useful, do not provide enough information with which to construct an individualized program (Hammill). The instructor needs an assessment device which deals with the specific objectives of the class and determines such factors as the level of content and how best to teach the information and skills. This pre-instructional testing accomplishes two major purposes for the physical educator. It determines whether the goals and objectives, set down during the planning stage, are relevant to a class or an individual's needs and level. Secondly, the assessment determines the level and instructional needs of each student. Without this pre-instructional assessment, a number of results can occur, including:

1) Students are taught skills already acquired;

2) Students are taught at a skill level much higher

than they can accomplish, causing failure;

3) Students cannot understand what is expected because the wrong teaching method is employed;

4) There is a lack of motivation because the wrong reinforcers were employed.

Before assessment can begin, the instructor needs to determine an assessment schedule. It does not matter if it is at the beginning of each monthly plan or at the beginning of the yearly plan as long as it is before the instruction of the skill objective being tested.

Determine the Assessment Device

Unless the instructor is using curriculum-based resource materials, which should already have the assessment devices included, the best test may be constructed by the physical educator. It should be specific to the material being taught. The assessment device should be a criterion-referenced test with specific determination of success or failure of the objective components. Some possibilities for test design include rating scales, checklists, participation charts, and anecdotal records. The test should be short and need no special equipment, materials, or personnel. Another good quality of a test of this nature is one which can be given in the different situations of play, instruction, or structured testing. For the assessment to be a useful tool it should be at the approximate level of the students. This is determined by the fact that if any child either fails at all the component parts of the skill or succeeds at all the

component parts, the assessment device was inappropriate. Each child should have both success and failure to be able to accurately determine his/her level.

Preparation

To assess quickly and accurately the tester should be familiar with the skill and its component parts. The tester should study the assessment device and know the recording process, time involved in assessing each component, and whether any of the components need to be combined or the score sheet modified to reduce the testing time. The tester should organize the materials and equipment that are needed and the class organization for the test. A determination of the assistants, directions, and environment for the assessment should be made.

Assessment

The instructor should use any information that will help his/her lesson plan and the instruction of the child. The assessment should be conducted as quickly and as accurately as possible. The skill components should be tested from the highest level to the lowest level and the directions should progress from verbal cues to demonstration and verbal cues to lowering the learning task.

Prescribing

As a doctor uses lab tests, patient history, and observation to determine the medication prescribed to a patient, a teacher uses the test scores to prescribe medication (in-

struction) to a student. Prescription is the effective use of the child's assessment data in planning daily instruction, activities, games, and conditions to enhance the child's acquisition of the objectives. Accurate prescription rests on two major responsibilities of the instructor:

1) The accurate interpretation of the test results;
2) The accurate intervention of instruction, activities, games, and teaching methods, that meet the needs of the child.

Identifying the Instructional Level

The initial instruction to a child should be given on those parts of the skill that the student is closest to achieving. The assessment will identify the level of ability and in particular the skill component which the child is closest to achieving. Identification of those components allows each student to receive instruction at the exact level continuing his current skill and knowledge. Once these initial components are achieved, instruction will then concentrate on the components that require a greater amount of instructional time.

Teaching Methods

Besides diagnosing appropriate level of content, the assessment device should give the instructor valuable information helping to determine such factors as how the student best acquires new information and skills, and the student's learning style. Based on the levels of ability and the particular skill components the child needs instruction in, the

class can be divided into instructional groups which can efficiently work at their level. The activities determined in the planning process may need to be modified to fit the needs of the class, instructional groups, skill levels, or of one particular child. The action words that the child best responds to should be determined from the assessment process as well as the reinforcers. All this information concerning the best methods to instruct the child should go into the planning of the daily lesson plans.

Teaching

All aspects of instruction prescribed for a child or group of children must focus on the objectives and goals determined in the defining and planning process. Practice is arranged by providing opportunities for a child or group to use the skills. When the physical education time is limited, the instructor needs to expand the practice time by including the regular classroom teacher and work at home including the parent or guardian. Practice can be in the form of planned activities or free play which both can strengthen the skill.

Gym Management

The physical educator needs to assemble all the drills, activities, games, materials, equipment, and determine the instructional areas. The equipment should be in good working condition and be set up before the students arrive. New equipment should be introduced gradually and systematically, and any extraneous equipment, materials, noise, and distrac-

tions should be removed. Instructional areas should be assigned to help in the management and organization of the class.

Organizational Structure

Specific strategies should be used to help design the daily lesson plan, and the instructor should be well prepared for the lesson. One of the most important variables involved in the acquisition of knowledge and skills in the on-task time. This time that the student is actively involved in the learning and practicing of the skill should be maximized. Activities, games, and instruction should be designed around the frequent use of the desired skill.

Other organization strategies include: class organization, class movement patterns, and staffing.

1) Space needs should be approximated for each student.
2) Equipment should be arranged so the student does not have to wait.
3) The student should be able to clearly see all instruction and demonstrations.
4) The students should be effectively grouped, whether it is with all at the same level or the experienced student working with the inexperienced.
5) The activities, games, and equipment should be safe.
6) There should be a regular routine to help the child understand what is expected and to increase the accuracy and speed of the response to a changing situation.

7) Different patterns and procedures that can be used to assist the instructor are: circles, lines, teams, relays, and scattered.

8) The instructor can utilize aides, other students, parents, and other teachers such as the regular classroom teacher or special education teacher as additional staff.

9) The staff can be assigned to work with specific equipment, children, or groups which greatly increase the organization and on-task time of a class.

Behavior Control

Such factors as elicitors (cues and action words), reinforcers, transfer and generalization, knowledge of results, and the child's success can all affect the acquisition of knowledge and skill. Elicitors should be appropriate to each child. Some might respond best to demonstration, verbal explanation, physical manipulation, or some combination. The instructors should be aware that both the action words and cues, and the reinforcers, can and will change for a child, so they must be flexible. The development of transfer and generalization of a skill can be increased by the reinforcement of the skill in different settings as in the home or play. An important method of increasing the desired behavioral response and refining that response is through the child's knowledge of the results. Those results should be both specific and general. There is probably no greater motivator than that of a child's success and achievement. The instructor should

work on skill components that will offer a degree of success. When there is failure at a skill or skill component, the instructor needs to break down the skill into smaller components.

Program Evaluation

The physical educator should continually reassess during the class instruction. The information obtained through continual assessment is used in documenting the progress of the child and class, and in determining program progress. Input from evaluation is used to continually revise every other step in the prescriptive teaching process. Objectives may need to be changed or added, teaching methods may need to be changed, goals included or future assessment devices changed. This continued evaluation will affect the prescribing of instruction on a day-to-day basis. If there is a lack of time and staff to conduct immediate recording, a time should be set aside for reassessment. The instructor will also need to reassess the completed skills at regular intervals, to determine if newly acquired skills are being retained.

Child's Progress

The physical educator needs to determine the appropriate amount of positive change necessary to proceed to the next objective. A determination of whether or not the gains are significant by the knowledge of the student's abilities and the amount of time allotted to the objective must be made. The physical educator should set expectations for each student and should have some kind of individual record of that

progress. Then target maintenance levels for each student should be set, and the instructor needs to assure the skills will be maintained over time.

Group Progress

The instructor needs to continually determine the appropriate amount of positive change expected from the class, and to determine whether or not the gains are significant by the knowledge of the class abilities and the amount of time allotted to the objective. The physical educator should set expectations for the group and have a group record of progress. he instructor also needs to assure that maintenance levels for the group are set and make sure the skills are maintained over time.

Program Input

From the data obtained from the individual and group progress, the instructor now has valuable information to put back into the program to make those needed changes to develop appropriate teaching actions.

If the student or students did not reach the criteria for success, the instructor needs to ask himself these questions:

1) Are the objectives too difficult?
2) Were the drills, play, practice, and games enjoyed, or at least attended to with minimal disruption?
3) Was the purpose of the activity clear to the students?
4) Were the students actively engaged in task-related instruction on the components they needed to achieve

or develop?

5) Was the instruction on-task time? Would the same methods be used?

6) Were the activities changed, re-emphasized or modified before the interest tapered off?

7) Were motivation and reinforcement positive and applied adequately?

8) Were distractions minimal?

9) Should the time frame for instruction be changed?

10) Was the staff following procedures?

11) Were the cues and action words appropriate for each student?

12) Were reinforcers selected appropriately for each student and situation?

The instructor may wish to redefine the criterion levels he determined for success of the student and/or class.

If the gains are satisfactory, the instruction should terminate instruction and determine maintenance levels. If the gains are not enough, but students can succeed given more time, the instructor can continue the prescriptive teaching on the skill objective. The instructor may want to change one or more aspects of the prescription. The physical educator may decide to task-analyze the skill, change the instruction format and the games, drills, and activities, or may wish to change the grouping. If the instructor needs extra time for an objective, a reduction in the other objectives' time will occur. The instructor must determine what the priorities are.

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Chapter 5

Adapting Activities and Games Through Games Analysis

Definition of Purpose

Games and activities play an important role in the curriculum of an elementary physical education program. Skills often identified for enhancement through games in an elementary program are (a) to promote socialization, (b) to facilitate emotional understanding between and within children, and (c) to aid in the development of motor skills.

Teachers must keep in sight the value of games and remember they are not time-fillers. The comment that "the kids enjoy them" is well taken. However, children enjoy all types of movement. Games in a physical education class should be used for three reasons. First, to provide a setting in which the instructor can conduct assessment of skills in a natural environment. Second, to provide a meaningful setting in which the teacher can provide continued instruction on a particular skill whether the skill is related to the psychomotor, cognitive, or affective domain. Last and perhaps most important, games should provide a setting in which the child can practice the skills in which he/she has received instruction.

Often, traditional games do not give students an opportunity for success, and eliminate students because of a low skill level. It is these students who especially need the participation time to improve their skills. Elimination from a game does not assist the children to improve their skills; instead, it is a detriment to their skill development and their self-confidence.

There are many different methods that can be used when modifying a specific game for the needs of a class. An instructor can use a traditional game with slight modifications, create a totally new game but use the same goals and objectives, or allow the class to make up a game of their own. The final decision is to use the game that best serves the needs of all the class, whether handicapped or highly skilled. The handicapped are not the only students who need and can benefit from modified activities. Any instructor who wishes to modify an activity needs "only an understanding of the needs of the students who will participate, the ability to analyze the components of the activity and enough flexibility to be able to try something new" (Michigan Department of Education report, p. IV-27).

When adapting or modifying games for the handicapped student, there are certain factors that need to be taken into consideration. These factors include: (1) a medical clearance, (2) carry-over value for the students, (3) total body needs of the individual, and (4) safely constructed setting. Safety of all students should always be considered when deciding upon an activity to use in a class. When working with the handicapped, at times different precautions must be taken because of the nature of the handicapping condition.

Games analysis is a generic model that can be used by any teacher, on any game and for any class. "It provides a framework in which all movement games can be analyzed" (Morris, p. 2). The games analysis model has six components for

consideration: (1) players, (2) equipment, (3) movement patterns, (4) organizational patterns, (5) limitations, and (6) purpose. A games analysis can be developed for traditional or creative games. Some of the different options in each component are shown in a chart on the following page.

Players

Whoever said that basketball has to be played with five players per team, or volleyball with six players per team? By using games analysis, the number of plays can be modified to suit the game and class. The number of players on each team also does not have to be equal. Through player manipulation, games can be structured so that everyone participates, the teams have even skill levels, and all enjoy some success. If a game is chosen that has a limited number of participants at one time, an unlimited number of substitutions or options could be used to frequently help ensure that everyone participates.

Equipment

If equipment is to be used, a decision must be made as to what kind, the number of different types, the size, etc. "The decision to use or not to use equipment depends on the ability of the players, the geographic area the game is played in, the availability of equipment and the purpose of the game" (Morris, p. 15). Once the choice of equipment is made, it must be determined whether the equipment will be used in its traditional form or in some other fashion. Equipment can be used in many different ways other than its tradi-

GAMES ANALYSIS MODEL--CATEGORIES AND COMPONENTS

Players	Equipment	Movement Pattern	Organizational Pattern	Limitations	Purpose
individual	balls	running	random placement	3 outs per inning	To win
2 per team	bats	jumping	circle	10 yards for 1st down	To promote cooperative behavior
3 per team	sticks	hopping	columns	boundaries on field	To help develop locomotor skills
4 per team	gloves	skipping	double circles	5 min. per quarter	To promote problem-solving behavior
5 per team	hoops	walking	files	rag below waist	To aid in eye-hand coordination
6 on one team, 4 on another	plastic bottles	galloping	double columns	only 5 players per team	To help develop self-concept
even number on one team, odd number on other	ropes	kicking	staggered file	4 downs to make a touchdown	To develop competitive spirit
	bases	throwing	even/odd file	must dribble the ball for every step taken	To promote sportsmanship
	wands	catching	diamond		
???	bowling pins	twisting	triangle		To develop cardiovascular fitness
	individual body parts	rolling	square	???	
	???	???	???		

Permission for use given by author and publisher: G.S. Don Morris, How to Change the Games Children Play (2nd ed.), Minneapolis: Burgess Publishing Company, 1980.

tional use. This versatility of equipment opens up endless possibilities of different games to be created and played. So many of the traditional games used in physical education classes today can be adapted into a new game simply by changing the equipment or the way it is used.

The initial decision to be made about equipment is the need of the physical education program. It should also be determined whether the equipment on hand meets the needs of the students and which students, if any, need adapted or special equipment. "An occupational, physical, or recreation therapist can help you identify students who need adaptive equipment and show you and the student how to use it" (Michigan report, p. IV-19). Often it is fairly simple to modify or adapt a piece of equipment so it meets the special needs. If a piece of equipment is being adapted for a specific child, the teacher needs to consider the child's individual strengths and limitations.

Equipment used does not have to be expensive or elaborate. The simpler equipment is, the easier it is for a child to continue the activity away from school. Some equipment such as bean bags, parachutes, inner tubes, hoops, etc. can be obtained at no cost to the program or be easily made very inexpensively. If equipment is going to be purchased, "consider its portability, washability, durability, economy, size and diversity" (Seaman & Depauw, p. 421).

Audible balls, goals, devices to assist in moving such as scooter boards, tricycles and adapted wheelchairs are examples of special equipment that might be needed for the special needs

of the handicapped student. This equipment and any adaptations of regular equipment may facilitate increased participation by the handicapped student in the physical education program. The following is a short list of simple equipment and adaptations, suggested by the Michigan Department of Education (p. IV-19, 20), that may help make games and instruction more appropriate for some students. For students with:

"1) visual problems and the developmentally young, use -
   a. ball with a bell inside or large balls for tracking skills
   b. large striking implements
   c. brightly colored equipment
   d. smaller balls for rolling/grasping skills
2) difficulty grasping or afraid of the ball, use -
   a. deflated balls
   b. balls made out of soft materials such as nerfs or yarn balls
3) the need for a longer amount of time to react, use a partially deflated ball.
4) limited strength for standard equipment, use lighter-weight equipment made from lightweight materials
5) hearing impairment to give them directions, use -
   a. pictures
   b. gestures (limitations)
   c. blackboards."

Movement Patterns

Almost every game included in a physical education program

has some type of movement component. Some games have a movement progression, while in others none of the movements are interrelated. All movement games have some type of locomotor patterns, non-locomotor movements, or reception and propulsion skills. "Game designers need to understand that movements are performed in various directions, at different body levels, and at a variety of speeds and forces" (Morris, p. 13). They should also be familiar with the movement and be able to task-analyze the skill. There are sources available which can be used to analyze the skill. For many complicated movements, if broken down into their individual parts and taught to the class in a progression, the student may master the movement with greater ease than if they were to try the complete movement. Often it is just one part of the movement a child is having trouble with; if this part is learned, the entire movement may be mastered. Most children have an easier time learning a skill step by step, and these smaller steps provide the student with many opportunities for success, which may motivate the students to keep trying.

When constructing a game using this analysis model, movements can be included by the teacher as dictated by the abilities of the students or left up to those who play the game. If the movements are left up to the students, the game will most likely be different every time it is played. There is nothing wrong with this idea; however, if a game being played one day appears to be successful with the class, it would be advantageous for the teacher to make some notes on the game so that it might be used again.

There will be many factors which influence the movements chosen, such as skill level, number of players, playing area, and purpose of the game. The important point is that there are limitless combinations of movements that can be made into a game, and through the use of games analysis the games used in physical education can be designed for or by the class.

Organizational Patterns

Many choices and decisions are available to the teacher when considering the organization of a game. The purpose of the activity must be determined, how many teams there will be and how many players each team will have. Once these decisions have been made, there are four considerations that must be examined in regards to the games organization. The aspects to consider are: "1. whether the game will be structured or unstructured, 2. if the quantity of players is constant or changing, 3. is the game played on a specific location on the playing surface, or does it change, and 4. the positions of the groups in regards to each other, other teams and equipment" (Morris, pp. 8-9). Through games analysis teachers can provide the type of class and game organization that best fits their class.

Organization is a very important component of a lesson to consider. A well organized class can increase safety and the amount of on-task time students spend. There are also some children with limitations who need a very structured and well organized class to keep their attention focused on the activity. Teachers should establish some basic organization procedures for their classes that are consistent regardless of the activity

the class is presently working on.

These basic organizational procedures can be established during the initial week of class. Procedures should include such things as how the class should enter and leave the gym. For example: one teacher may want the classes to quietly enter the gym and go to their assigned squad positions so that attendance can be taken quickly. Some of the other procedures that might be established during this week are methods or signals to be used for starting, stopping, etc. These predetermined signals could include a whistle, flick of the lights, or the teacher's hand raised in the air. Since these signals are constantly used, and used for only one purpose, the students will know what to do immediately regardless of the activity they are engaged in.

These simple organizational methods can assist handicapped children to function with greater ease in a physical education class. These signals give them familiar cues related to what is happening and what is expected of them. This then gives them some security in the class and allows them to concentrate on new activities.

Organizational Formations

There are a wide variety of formations which can be used to organize a physical education class. The formation used for a particular class should enable the instructor to obtain the student's attention, see all of the students, and be seen by all the students. A formation should also be chosen that will allow all students to be involved in the activity and

become active in the game as soon and as often as possible.

When deciding on the organizational formation for a particular game or class, the Michigan Department of Education (p. IV-18) suggests:

"1. Minimum time should be used in moving students from one activity to the next.

2. Verbal directions and/or demonstrations should be given when needed with clarity and conciseness.

3. Signals for beginning and ending an activit- should be given prior to the start of the activity (especially if they are different from the signals normally used in class).

4. Safety procedures as indicated by the particular activity being conducted, should be established and followed."

The different organizational formations that can be used are:

1) scatter - students spread out throughout the gym and find "their own space." This formation provides minimum structure for the class while providing maximum participation.

2) squads - extended squad and squad with leader.

3) partner - used whenever two are needed for an activity. Should have a method to determine who partners with whom. Is effective to warm up and practice skills.

4) small groups - similar to partners but usually with 3-5 students.

5) single file - basic relay formation.

6) line and leader - used to practice skills. Leader directs by passing back and forth to each player.

7) circle - circle and leader.

8) semi-circle and leader.

9) double line.

Many other formations can be devised for use with any game by using some imagination, and these formations should fit the students' needs and the game requirements. The organization of a class is very important. It can mean the success or failure of any child or lesson. With careful thought, organizational formations can be a very effective aid for any teacher.

Limitations/Rules

Limitations are one of the easiest factors to manipulate when using games analysis. By simply changing a game's limitations or rules, it can be adapted to meet the needs of any class. The teacher can control the game's limits or allow them to be determined by the students during the game. Sometimes the limitations are affected by other factors such as the playing area, equipment available, players, etc.

Morris (p. 19) indicates three categories of limitations to consider when adapting a game's limitations: "1. physical aspects - such as geographic boundaries, team size, number of teams and equipment. 2. game conditions - how long to play and how to score. 3. game procedures - what is acceptable performance." Taking these categories into consideration, there are infinite ways to manipulate the limitations of a

game. Some examples of general modifications of limitations that can be made when working with hthe handicapped are:

"1. reduce size of playing area.
2. shorten time periods.
3. decrease distances.
4. lower nets or baskets.
5. increase size of targets/goals.
6. simplify movement patterns.
7. change rules to be less restrictive and to allow many opportunities for success.
8. reduce amount of rules/limitations students have to remember" (Seaman & DePauw, pp. 435-437).

When working with some handicapped children it is important to clear their program or activities with a doctor. In this way, the physical education teacher can obtain a better understanding of what the child is capable. The teacher also places himself/herself in a better position legally should such a situation arise.

Purpose

Games are played for many reasons, be it for enjoyment, to increase skills, for social interactions, etc. Physical educators who include gamesin their programs should have a stated purpose for each game that is played in their class. This mandates that a purpose be identified as the first step of the game analysis. The purpose for a game can be decided by the class or teacher depending on what is to be achieved by the game. The analysis helps match the game to the desired purpose. "So to make sure that games serve their stated purpose (physical-

skill development, group interaction, emotional growth and cognitive skills) game designers must think critically about the reasons for engaging people in a variety of game forms" (Morris, p. 19).

Facilities

Facilities can be an important part and consideration of a physical education program although elaborate facilities with all of the latest equipment are available to some, it is not the norm. Depending on the objectives of a program, some activities can be conducted in gyms, classrooms, or outside in nice weather. Wherever the activity is to take place, it must be safe and accessible to all participants. Arrangements can be made to use community facilities for such activities as swimming, racquetball, or for activities for which the school does not have facilities. Often a mutual trade of facility-use time can be made, thereby reducing the cost to the school for providing certain activities.

In areas that have periods of nice weather, outdoor facilities can be a useful addition to the program. Outdoor facilities might include pools, stadium, tracks, courts and playing fields. Some of these structures and fields may need some minor modifications to make them completely accessible to the handicapped. These modifications can include:

"1. No steps onto courts, play areas or fields
2. Ramps, lifts or handrails
3. Gates wide enough for a wheelchair
4. Grass short-cropped and where possible hard-surfaced

grass that doesn't retain or require much water

5. Asphalt surfaces free of obstacles with relatively few lines of different colors painted on them" (Seaman & DePauw, pp. 435-437).

Indoor facilities that are used may need slight modification to accommodate handicapped students. Gyms usually are large spaces that are accessible unless there is a piece of equipment that reduces accessibility. Locker rooms usually are more in need of modification, especially for those students in wheelchairs.

Effective use of facilities and games analysis requires only the knowledge of what you want to teach, how to teach it, and some creativity combined with common sense to implement a sound program of activities. This principle applies for all students and classes--not just the exceptional child.

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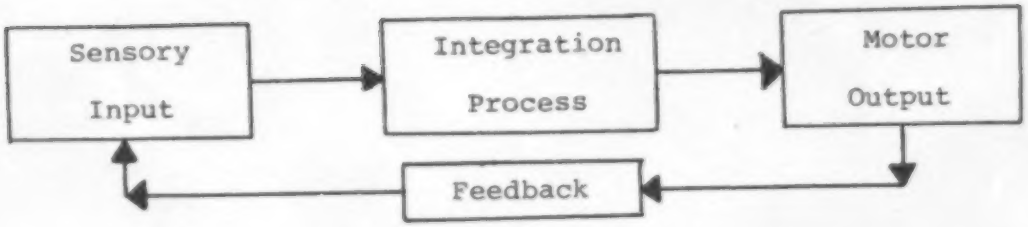
Chapter 6

Disability Considerations for Movement Environments

Learning Model for Motor Skills

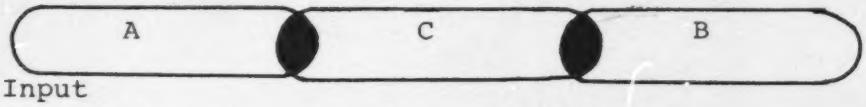


The eventual uncovering of the exact process of learning may well determine the most effective method of instruction and help teachers overcome certain disabilities in their students. Educators and psychologists have a general idea of how the learning process occurs and from this process can draw certain learning implications. Understanding the learning implications for a disability is going to be central in determining the success or failure in meeting the instructional goals and objectives of a child (L. Stallings). Probably the most obvious implication is that for a blind child. Would an instructor give visual instruction to a blind student? The instructor would utilize the student's other senses in his/her instructional method in working around that disability. A blind student is an obvious example, but what of some of the other disabilities, and how do they fit into the learning model? The following schematic represents a variety of disabilities and their positions in the learning model for motor skills.

- DISABILITIES -

Input (Sensory)	Integration (Information Processing)	Output (Physical)
Blind	Learning Disabilities	Cerebral Palsy
Visual Impairment	Emotional/Behavioral Disorders	Hypertension
Hearing Impairment	Mental Retardation	Rheumatic Heart Disease
Tactile Deficiency		Congenital Heart Defects
		Arthritis
		Cystic Fibrosis
		Sickle-Cell Anemia
		Seizure Disorders - Epilepsy
		Diabetes
		Muscular Dystrophy
		Asthma
		Spina Bifida
		Amputations
		Spinal Cord Lesions

The physical educator can most profitably think of learning not as a single process, such as memory, located in a particular site in the nervous system, but rather as a series of events involving a number of information-handling processes which occur in order (L.Stallings). In any communication system, there is a great deal of variability in what goes in and what comes out. A good system will show some relation between input and output. No communication device is perfect; noise may be present anywhere in the system; therefore it is a rarity when the response will equal the stimuli.

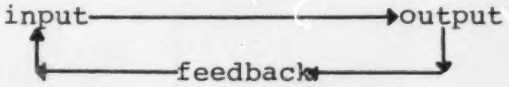


A - Input

B - Output

C - Overlap, transmitted information

Singer indicates that the human organism receives stimuli through the senses, has a brain as a controlling process and a storage system, and responds in the form of muscle movement. Each individual has a channel capacity above which information cannot be transferred. Greater input results in increased output, to a point. Feedback occurs when some of the output is isolated and fed back into the system as input. The principle of feedback is



characteristic of all organisms and closed-loop control systems. Information may be in the form of errors, if so, it is sent back to the device controlling the output. The input is then modified, and the output is corrected. Every human organism

must know or see the results; otherwise, improvement will not occur.

Input Disorders (Sensory)

Blind/Visually Impaired

For the purposes of education "visually handicapped means a visual impairment which even with correction adversely affects a child's educational performance. This term applies to both partially seeing and blind children" (Federal Register 42-163). The loss of vision can be placed into two different categories: 1) congenitally blind, and 2) adventitiously blind (blinded after birth). Those children who have had sight long enough to learn about the world around them learn concepts differently from those who have been blind since or near birth. These children have "pictures" in their minds from their experiences before becoming blind upon which they can draw. For these individuals it is easier to learn abstract concepts and words. Blind children best deal with concrete experiences.

The visually impaired can be classified by the nature of the impairment: 1) defects of visual acuity, 2) restriction of field of vision, 3) defects in color vision (colorblind). Other visual conditions students are likely to have are: 1) refractive problems (nearsighted and farsighted), 2) muscular problems (strabismus - eyes are directed inward or outward), 3) infectious diseases (pinkeye), and 4) structural problems (cataracts). A number of these conditions are correctable through surgery or glasses.

Many of the blind will exhibit blindisms which are rhythmic movements, theorized by some to be for stimulation as replacement

of all of the stimuli not received through sight. Some of these behaviors are: "1) eye rubbing, giving stimulation to the occipital areas, 2) rhythmic movements of some part of the body to relieve boredom or stimulation in light of the environmental deprivation, and 3) manneristic behavior as a substitute for physical activity" (Cratty, P. 121). Some blind children have blindisms that are not appropriate, and they must be taught to change these behaviors. When working with a blind or visually impaired student, the physical educator must remember that these children are capable of many of the same motor achievements as most students provided they have been taught the necessary skills and have appropriate equipment. "The apparently inferior motor skills of the blind are due to: 1) differences in experience, 2) differences in incentives relative to seeing others attempt the same task, 3) differences in opportunity to model appropriate skill patterns, and 4) possible incidences of neurological impairment influencing motor functioning among certain populations of the blind" (Cratty, P. 119). Physical educators should provide a remedial motor skills program to those in need of such a program, while other visually impaired may participate in regular physical education with minimal adaptations.

In teaching the visually impaired student, the teacher will have to rely on using the child's remaining vision and other senses to compensate for the lack of vision. A great deal can be taught to the child by using tactile, auditory, and kinesthetic experiences. One example is to manually move the child through the movement pattern so they can experience

the movement. An alternative to this method is for the student to hold onto the teacher as the movement is performed. The previous technique, however, often obtains better results and is less conspicuous in front of peers.

The number of games and activities that can be played by the blind is limitless. Most need only simple modifications. Examples of modifications are: 1) balls with sound devices inside, 2) goals with sound devices, 3) a peer for visually impaired to run with or a rope along the path that they can hold on to, and 4) in a swimming pool, lane buoys, and a sound device at one end so the blind swimmer can distinguish the deep end from the shallow. The most important point to remember is not to hinder blind students' motor experiences but rather to encourage them to achieve as much as possible.

Listed below are some general teaching suggestions for working with the visually impaired.

"1. Be aware of potentially dangerous situations that might cause additional eye damage
2. Enlarge targets
3. Use brightly colored equipment
4. Provide appropriate lighting
5. Be aware of possible need to modify activities that require students to change direction
6. Be aware of the use of space and unnecessary clutter
7. Be consistent
8. Provide structure and routine" (Seaman & DePaul. pp. 348-349).

Deaf/Hearing Impaired

Federal guidelines define "deaf" as a hearing impairment which is so severe that the child is impaired in processing linguistic information through hearing, with or without amplification which adversely affects educational performance. ..."'Hard of hearing' means a hearing impairment, whether permanent or fluctuating, which adversely affects a child's educational performance but which is not included under the definition of deaf..." (Federal Register 42-163).

Classification of hearing loss is often vague and can take into account many variables, but there are five generally accepted categories of hearing loss. These are:

"1. Profound hearing loss - essentially deaf
2. Severe hearing loss - educationally deaf
3. Moderate hearing loss - can hear loud conversation within 3 feet but meanings may be garbled
4. Marginal hearing loss - can hear conversation within 3 feet but miss about one half of what is said. Can hear with an aid.
5. Mild hearing loss - often overlooked because they don't usually experience learning problems" (Cratty, p. 143).

Hearing loss can be congenital or occur at any time throughout life. The loss can be caused by loud noises, infections, fevers, etc. There are three different types of hearing losses: 1) conductive loss, 2) sensorineural and 3) high-frequency loss. A conductive hearing loss occurs in

the middle ear. It is almost never a complete loss and usually can be improved with amplification. A sensorineural loss of the inner ear is usually a complete loss of hearing. Amplification rarely helps regain this loss. A high-frequency loss is a hearing loss at certain frequencies in which people can not hear that sound.

When teaching physical education to the hearing impaired, the teacher must first establish a basis of communication with the students. The deaf and visually impaired can participate in most sports with a minimum of adaptation and should not be restricted. Some very simple pieces of equipment can be used to replace whistles, buzzers, etc. Some deaf students have poor skills because of the lack of opportunity to play in neighborhood games, so when teaching the deaf a team sport, start with a lead-up game. These games will not only help them improve their skills, but also will start building the concept of working in a cooperative fashion.

Teachers should be aware that deaf students will get their information through visual cues such as lip movement, arm gestures, facial expressions, etc. Also be prepared to meet your students halfway by learning the basic signs needed for elementary communication. Teachers need to be aware of facing the deaf student while speaking because when they can not see you, they can not obtain the necessary information.

Tactile Deficiency

The tactile system which matures throughout life is one

of the senses used to investigate the environment in which one lives. Tactile dysfunctions may result in failure to identify pressure, lack of correct interpretation, and organization of information. The following are characteristics of some tactile disorders:

"1. "Tactile defensiveness - negative response to touch
2. Tactile-seeking behaviors - touching anything and everything
3. Inability to locate where on the body one has been touched
4. Complete lack of response to touch
5. Inability to discriminate between different tactile sensations
6. Inability to perceive stimuli simultaneously" (Seaman etal, p. 56).

There are two major types of tactile disorders: hyperresponsivity to tactile stimulation and hyporesponsivity to tactile stimulation. Those children who are hyperresponsive to tactile stimulation respond negatively to tactile input. They at times do not even tolerate the tactile stimulation from their own clothes, especially if any of the clothing is the least bit tight-fitting. These children need a large amount of personal space and often appear to lack affection. On the other hand, hyporesponsive to tactile stimulation seek tactile stimulation. These children are often compelled to

touch everyone and everything including themselves.

Integration Disorders (Information Processing)

Learning Disabilities

"Children with special learning disabilities exhibit a disorder in one or more of the basic psychological processes involved in understanding or in using spoken or written language. These may be manifested in disorders of listening, thinking, talking, reading, writing, spelling, or arithmetic. They may include conditions which have been referred to as perceptual handicaps, brain injury, minimal brain dysfunction, dyslexia, developmental aphasias, etc. They do not include learning problems which are due primarily to visual, hearing, or motor handicaps, to mental retardation, emotional disturbance, or to environmental disadvantage" (Subcommittee on Education of the Committee on Labor and Public Welfare p. 14).

A number of resources attribute the presence of a learning disability to an aberration of neurological functioning. It has been thought such a dysfunction may be due to any of the pre- or postnatal influences during the development of the child. Such factors as hereditary anoxia, minimal brain damage, or chemical imbalances are all examples of possible causes of learning disabilities (Fallen).

Sherrill indicates that children with learning disabilities do not necessarily exhibit the same particular strengths and weaknesses. Though different, the L.D. child does display

certain behaviors more often than the normal child. Among these behaviors are: hyperactivity, distractibility, dissociation, perseveration, social imperception, poor body image and self-concept, poor spatial orientation, and clumsiness.

Hyperactivity. The hyperactive child may display problems of listening, thinking, reading, writing, spelling, or arithmetic, usually related to the inability to remain on task long enough to make a reasonable gain in these areas. Hyperactivity is a medical problem. It is usually recognized and referred to a physician long before the child enters school. Most physicians use medication only as a lost resort in the management of hyperactivity, and then prescribe: ritalin (methlphenidate), dexedrine, benzedrine, or methedrine, all of which are stimulants. These stimulant drugs slow down the child, because of the paradoxical effect of them on children therefore it increases the attention span, and enables the child to concentrate on one item for a longer period of time. Hyperactivity usually ceases at about the time of puberty, and medication can be reduced or eliminated.

Educational prescription for the hyperactive child rests on four principles which affect the learning environment.

1. The establishment of a highly structural program.
2. The reduction of the environmental space.
3. The elimination of irrelevant auditory and visual stimuli.

4. The enhancement of the stimuli value of the instructional materials themselves.

Distractibility. Distractibility is the inability to focus attention on any particular object or person in the environment. The child lacks the ability to block out any irrelevant stimuli like other children, and is distracted by any movement, sound, color, or smell.

The physical educator can reduce distractibility by: the elimination of irrelevant auditory and visual stimuli and the enhancement of the instruction-material stimuli. This will be a great challenge to the physical educator in a gym naturally filled with a multitude of possible distractors. The problem of distractibility is very similar to hyperactivity but usually has no medical basis and may not cut across all aspects of the childs activities.

Dissociation. Dissociation is the inability to socially, visually, or auditorily perceive things as a whole. These children are sometimes criticized for displaying poor judgment when, in fact, they lack the ability to see the whole and respond only to detail within the whole. The whole-part-whole method of teaching with as little verbalization as possible seems to help the child cope. Physical contact, putting arms around the shoulder, patting, and reinforcing cues, can also help reassure the child in his/her ability to see the whole. Involvement in partners, games, and dance will help the pupils to see themselves socially as a whole. Failure in sequencing

body movements is also a characteristic of a child who dissociates. Physical education offers many opportunities for practice in sequencing, with activities such as dance, gymnastics, game instruction, and most instruction in skills.

Perseveration. The inability to shift from one idea or activity to another is perseveration. An example is the bouncing of a ball long after the signal for stopping has been given, or persistence with a particular topic of conversation. Perseveration is seen in physical education when a pupil refuses to adopt rules or new strategies in a game. To help minimize this problem, the physical educator should sequence activities in such a way that distinctly different activities precede and follow each other in formation, starting position, rules, skills, and strategies. Games based upon stop-and-go activities reinforce the ability to make the transition from one activity to another.

Social Imperception. Some children seem to have problems in making friends of the same age. The child is unable to recognize the meaning and significance of the behavior of others, and then does not realize when one is being made the point of a joke, angering others, antagonizing others, or boring another person. A highly structured program which indicates the amount of time, space, rules, and who the child can interact with, can greatly cushion the normal give and take of childhood dramatic interaction.

Games of make-believe can help the child learn to cope with imagination and the abstract meanings that are often apparent in conversation and jokes. Dance with its inherent concern for body language, nonverbal communication, and opportunity for socialization is perhaps the greatest help.

Poor body image. During development, a child becomes aware of the body, internalizes perceptions, and develops what is known as body image. It is generally agreed that certain traits comprise an immature body image: inability to identify body parts, to make right-left discrimination on oneself or others, difficulty in distinguishing between male and female bodies and body proportions, and problems in matching their own somatotype and body parts with others. Prescription for immature body image involves the use of finger games, action songs, dances, games, and exercises that refer to body parts. Opportunities should be provided for children to see themselves in a mirror, or videotape, and in moving pictures.

Poor Spatial Orientation. The L.D. child has been described as lost in space. The child loses the way enroute to a destination and shows confusion when given north-south-east-west, and right-left directions. The child will also experience difficulty in determining height, length, width, distance, and other coordinates of space as well as figure-ground determination. Problems may arise when the L.D. child crosses the midline, or tries to shift weight from side to side. Activities for problems of laterality, right-left discrimination, and crossing the midline are similar in

that all pertain to balance and the development of cross-lateral movement patterns. Prescription involves the use of balance beams and boards, trampolines, and sideward beam walking. To aid in figure-ground distinction, all balls, play equipment, and floor patterns should be brightly colored to contrast with the background. Visual and auditory games which stress the location of objects and sounds can help in figure-ground determination and other coordinates in space.

Clumsiness. The child with learning disabilities is typically clumsy and has awkward motor responses. There may be as much as a four-year delay in motor skill. There is little correlation between fine-motor and gross-motor ability; thus a child may have a gross-motor or a fine-motor delay. Prescription denotes a motor development program that entails practice on the specific skills in which the child is weak.

Emotional-Behavioral Disabilities. The term "emotional disability" or "disturbance" refers to the psychiatrically based conditions of psychoses, neuroses, and personality disorders. Educators have begun to use the terms "behavioral disabilities" or "behavioral disorders" to describe the emotionally disturbed and socially maladjusted. Behavioral disabilities have been referred to as a deviation from age-appropriate behavior which significantly interferes with the child's own growth and development and/or the life of others. According to federal guidelines, the emotionally disturbed or emotionally disordered child is defined as an individual who exhibits one or more of the following characteristics over a long period of time and to a

marked degree, which adversely affect educational performance:

1. An inability to learn which cannot be explained by intellectual, sensory, or health factors.
2. An inability to build or maintain satisfactory interpersonal relationships with peers and teachers.
3. Inappropriate types of behavior or feelings under normal circumstances.
4. A general, pervasive mood of unhappiness or depression.
5. A tendency to develop physical symptoms or fears associated with personal or school problems.

The definition does not include children who are maladjusted, those reacting to environmental deprivations, unless they are also seriously disturbed emotionally (French & Jansma).

Behavior Disorders. The American Psychiatric Association lists seven categories of childhood and adolescence behavior disorders.

1. Hyperkinetic reaction, which is characterized by overactivity, restlessness, distractibility, and short attention span.
2. Withdrawn reaction, which is a disorder characterized by seclusiveness, detachment, sensitivity, shyness, timidity, and general inability to form close interpersonal relationships.
3. Overanxious reaction, which is characterized by chronic anxiety, excessive and unrealistic fears, sleeplessness, nightmares.
4. Runaway reaction, which is characterized by escape from threatening situations by running away from home.
5. Unsocialized aggression, which is characterized by

overt or covert hostile disobedience, quarrelsomeness, physical and verbal aggressiveness, vengefulness, and destructiveness.

6. Group delinquent reaction is characterized by the acquisition of the values and behavior of a delinquent peer group whose members characteristically steal, skip school, stay out late at night, and cause trouble.
7. Other reactions which are not described in this group but which are nevertheless more serious than transient situational disturbances but less serious than psychoses, neuroses, and personality disorders.

Sherrill indicates that dance, sports, and aquatics are often viewed as good prescription for behavior disorders. Team participation can be meaningful enough that a youngster will curb unsocial behaviors. The physical educator can help aggressive behavior by helping the child express his/her hostile feelings in a socially acceptable manner. The child must learn that it is acceptable to take out aggression on things, but never on persons or animals. Such activities as boxing, wrestling, or contact sports which place the child against another child are considered emotionally destructive for those who cannot control their emotions.

The withdrawn and overanxious child should not be forced to participate in activities which he/she fears or intensely dislikes. Such activities as tumbling, swimming, and some gymnastic equipment seem to provoke more unfavorable reactions than most other physical education activities. Coaxing a child usually will not help the withdrawn or overanxious reaction, but the gradual

strengthening of the child's self-confidence and feelings of self-worth will.

Neurotic disorders. Most individuals have some neuroses which include such personality disorders as anxiety, phobias, obsessive ideas, compulsive rituals, excessive depression, chronic fatigue, depersonalization, and hypochondriases. The neurotic tends to reduce the contact with reality yet does not have serious personality disorganization. The neurotic child's reactions may be inefficient and inadequate, but they are not antisocial in behavior (Sherrill).

Psychotic disorders. A person suffering from psychotic disorders loses touch with reality. Where the neurotic tends to ignore reality, the psychotic denies it. The person builds false concepts toward reality, exhibiting behavioral responses deemed peculiar, abnormal, and antisocial. Of the many psychoses, schizophrenia is by far the most common. Some of the general symptoms of schizophrenia include: moodiness in which the person is given to sudden changes in states of gloom or euphoria, or euphoria with little or no provocation or association with current events; delusions in which the individual has persistent erroneous beliefs; hallucinations in which the individual may react to a stimulus which did not occur; withdrawal in which the person prefers to be secluded and remote from others; and stupor, where an individual retreats from the real world and exhibits extremely dulled senses. A few of the schizophrenia class are:

1. Paranoid. Showing extremely defensive behavior, perceiving that he is the object of attention from

many sources, also associated with delusions of grandeur.

2. Catatonic. Denial of reality physically and psychologically either by overactivity or by withdrawing.
3. Hebephrenic. Utilization of the defense mechanism of regression. The individual reverts to a time when his/her world was secure. Affective disorders are the second most common group of psychoses. Individuals with these disorders lose contact with the environment because of either extreme depression or elation. The manic-depressive psychosis is characterized by alternating moods.

Wolman indicates four basic principles for working with the schizophrenic: 1) the gradual reversal of deterioration, 2) constructive progress, 3) education toward reality, 4) directive guidance. As in prescriptive teaching, it is important to build upon the skill the child already has. It is essential that the child not feel disapproval and not be criticized. Play is a very important part of the process of shifting the child's attention from the inner domain toward the real world. The child may attribute monsterlike qualities to playground equipment, and the physical educator must help convince the child of the true nature of the things. It is important to tell the child the difference between right and wrong rather than hoping for success by a trial-and-error method.

Sherrill indicated other methods of working with the schizophrenic or overactive child which include:

1) Avoid conflicts which might cause temper tantrums.
2) Distract aggressive behavior by getting the child

interested in something different.

3) When the child is striking or biting another child, reason with him/her.
4) Do not show confusion over or impatience with the child's behavior.
5) Do not use threats of physical violence or abandonment.
6) Structure the activities and environment to avoid bad behavior, and reward appropriate behavior.
7) Encourage social interaction with team and individual sports.
8) Structure groups carefully to attain a balance in aggressive and passive children.

Depression. Depressed children can be characterized as usually withdrawn and suffering a loss of initiative, appetite, and have difficulty sleeping. They lack a sense of self-worth, believing instead that they are bad and should punish themself. The depressive child will have tendencies toward suicide, truancy, disobedience, or any other self-destructive behavior.

The first priority of the physical educator is to try to keep the depressed person active. Maintain a full schedule of activities even though the child may have no desire to participate or learn new skills. Learn to recognize and cope with the anger which the child turns inward, and try to turn it outward.

Autism. Young children who are psychotic or schizophrenic are often called autistic. Autism is generally characterized by severe problems in communication and the ability to relate to people. Specific characteristics include:

1) Difficulty in speech and language
2) Withdrawal, apathy, unresponsiveness
3) Resistance to change
4) Disinterest in people and environment
5) Interest in inanimate objects
6) Hyperactivity (self-stimulatory acts)
7) Sleeping and eating problems
8) Inappropriate response to stimuli
9) Apparent intellectual disorder (French & Jansma; Sherrill)

Because of the severity of the disorder, the autistic child is not usually handled in the regular school system. Program prescription attempts to establish a rapport with the child. The teacher may follow the child around for a long period before contact is made. It is important not to force anything on the child, including the instructor, but to provide a potentially positive interaction environment. Again the instructor should start with the motor skills the child already possesses and utilizes, such as the manipulation of objects, and build upon that. Dance and movement therapy will work with the autistic children who are more advanced and may be mute or have severe language problems (Sherrill).

Mental Disorders

The American Association on Mental Deficiency and P.L.94-142 define mental retardation as being: (a) significant subaverage general intellectual functioning, (b) deficits in adaptive behavior, and (c) originating during the developmental period. All the criteria must be met before a child can truly be classified

as mentally retarded (Grossman).

The degree of a child's mental retardation is differentiated by levels determined from I.Q. scores. The most common classification uses the terms mild, moderate, severe, and profound. The educational classification includes the terms educable, trainable, and custodial.

General Classification:

Level	Binet I.Q.	Wechsler I.Q.
Mild	52 - 67	55 - 69
Moderate	36 - 51	40 - 54
Severe	20 - 35	25 - 39
Profound	20	25

Educational Classification:

Level	Relative I.Q.
Educable	50 - 75
Trainable	25 - 49
Custodial	25

The I.Q. ranges should be viewed as variable limits.

Significant subaverage general intellectual functioning refers to low scores on a standard intellegence quotient test (I.Q.). Though the I.Q. test determines the classification of the levels, the I.Q. test alone does not determine a mental handicap. Deficits in adaptive behavior must accompany the low I.Q. performance. Adaptive behaviors include areas of maturation, learning, and social adjustment; skills include self-help (feeding, dressing, and toileting), communication, language, math, behavior, and social.

By law, the developmental period refers to a period from birth to twenty-two years. A person must be diagnosed as mentally retarded before the age of twenty-two. Diagnosis is usually made before a child reaches the first grade.

Causes of a mentally handicapping condition cannot always be determined but will relate either to heredity or the environment. Wiseman lists several possible prenatal, perinatal, and postnatal causes of mental retardation:

I. Prenatal
    A. Infections
        1. German measles (rubella)
        2. Malaria
        3. Mumps
        4. Syphilis
    B. Irradiation
    C. Drug ingestion
    D. Chromosomal anomalies
    E. Genetic metabolic anomalies that affect:
        1. Nutrition
        2. Hypoglycemia
        3. Lipidoses
        4. Aminoacidurias

II. Perinatal
    A. Anoxia
    B. Hypoxia
    C. Prematurity
    D. Trauma

III. Postnatal

A. Environmental deprivations

1. Maternal
2. Familial
3. Social
4. Cultural
5. Institutional

B. Hormonal anomalies

C. Infections

D. Poisons

E. Trauma

Physical education programming is affected by the level of retardation and the individual medical classification or disabilities (Sherrill). The common psychomotor, cognitive, and affective characteristics of the levels should be considered by the educator, but they should gear their instructional strategies to the individual needs (French et al).

Retarded children follow the same developmental patterns as the normal child, but at a slower rate (French et al). Physical fitness and motor ability are generally below normal, increasing as the chronological age increases. Percentage of success is greater with skills involving physical ability than with skills requiring thought and reasoning. Retarded children function better in noncomplicated activities with defined rules and boundaries. Memory and attention are both weak, and learning is best retained by actually doing the activity. Transfer and generalization must be taught, and

the vocabulary is limited, requiring the use of few and common action words. The retarded child is often easily frustrated and often has an inadequate self-image. A lack of motivation and aggressiveness is common, along with a difficulty exhibiting appropriate behavior, and a tendency to be upset by changes in routine.

The child also has the same basic needs as the non-handicapped, and the physical educator should view him/her as an individual (French et al). The physical educator will find a greater range of abilities in the handicapped population than in the non-handicapped and thus must gear his/her instruction to the individual and not to a group.

The mildly retarded child has a motor ability similar to the normal child's ability (Sherrill). Approximately 89 percent of all mental handicapped persons fall into the mild category, consequently the physical educator should find that most retarded students can be successful in regular physical education. The lower-levels of retardation require an understanding of the motor capabilities at each age and level. Individual differences should be noted with each pupil encouraged to achieve optimally.

Mildly Retarded. In height, weight, and motor coordination, as in motor ability, most mildly retarded children are similar to their normal peers (Kirk). Sherrill indicates that prescription includes physical education instruction broken down into small sequential progressions designed to insure success and progress. Children at this level should be integrated into the regular

physical education and athletic program as early as possible. Physical education is extremely important, for most of the jobs available in later life will be of the blue-collar type, demanding a high level of motor skills and fitness. Lifetime sports and activities such as swimming, bowling, golf, and skating are a high priority in helping to maintain fitness and motor skills and productive use of their leisure time.

These children also tend to lag two to four years behind non-retarded children in physical fitness. Those areas in which they are behind include static strength, dynamic strength, explosive strength, flexibility, speed, cardiovascular endurance, and agility. The physical educator should present fitness activities based on the child's present level of performance; and, where time limits the degree of success, homework, progress charting, and general fitness instruction should be taught.

Performance in the motor areas of static balance, dynamic balance, body perception, gross agility, locomotor agility, throwing, and tracking are usually inferior to that of non-handicapped peers. The instructor should systematically offer instruction in the deficit areas of motor skills and offer motor activities that complement the instruction.

Physical education instruction should be geared to the developmental age level to ensure understanding and success. The social and communication skills associated with an activity can usually be learned, but the child may need help learning to deal with stress and frustration situations specific to the activity.

Expectations of the instructor may dictate the success of the class. By stressing ability rather than disability in teaching physical education the child can expect achievement. The mildly retarded child is more like than unlike the normal child in all areas of development, but particularly in the psychomotor area (French et al).

Moderately Retarded. In planning physical education activities for the lower functioning children, social and mental age become more important than chronological age. A moderately retarded child's mental age is the product of chronological age and I.Q. ($M.A = \frac{C.A. \times I.Q.}{100}$). Social maturity, mental age, chronological age, and I.Q. will aid the teacher in selection of appropriate games and activities.

The moderately retarded child tends to be less fit, overweight, and less motor proficient than the normal or the mildly retarded peers. Directions must be as simple as possible, using a minimum of words, repeating them if necessary. The child may have a low tolerance for frustration, which can lead to aggressive behavior, and instruction in dealing with stress and using appropriate outlets should be emphasized. (French et al).

In the moderately handicapped group, the instructor will also start to see physical handicaps along with the mental and must learn to deal with the multiple situations.

Down's Syndrome. Children with Down's Syndrome (Trisomy 21) represent a rather large and obvious portion of the moderately

retarded population. Children have 47 chromosomes in each cell rather than the normal 46. This extra chromosome is in the twenty-first chromosomal pair. There are three different types of Down's Syndrome: (a) Standard trisomy, (b) translocation, (c) mosaicism. Children with Down's Syndrome are so different from other retarded individuals that the physical educator should be aware of their characteristics.

All of the systems of the body show deficiencies in development. Physical growth is slow and stops altogether at an early age. Few will exceed a height of five feet. Almond-shaped, slanted eyes which are often close-set, a flattening of the bridge of the nose, a large tongue, and congenital heart disorders are common characteristics. Other common traits which misht be associated are muscular weakness, dorsolumbar kyphosis, dislocated hips, funnel-shaped or pigeon-breasted chest, club feet, lax ligaments, looseness of the joints, body-pronated feet, circulatory defects and high susceptibility to respiratory infection.

Children with Down's Syndrome are especially deficient on nonvisual tasks which require the interpretation of tactile and kinesthetic sensation. Vision may be impaired by strabismus, myopia, and astigmatism, as a result balance is often the perceptual-motor area most deficient.

As indicated a large portion of these children fall into the moderately retarded category. Social maturity of the Down's Syndrome child is consistently greater than their I.Q. would lead one to expect. They are often described as affectionate,

relaxed, and friendly. A typical child is mannerly, responsible, cooperative, scrupulous, cheerful, but may be resistant to change (Sherrill).

Output Disorders (Physical)

Arthritis

Arthritis is a condition in which the joints of the body inflame, causing pain, swelling, and stiffness. It can occur at virtually any age. Rheumatoid arthritis is the type of arthritis which most impairs school age children. The juvenile rheumatoid arthritis has three different forms:

1) Polyarticular rheumatoid arthritis - more than one-half of the children afflicted with arthritis have this type, which causes joint inflamation and interferes with growth. As the condition worsens, the joints become stiff and their range of motion decreases.
2) Systemic rheumatoid arthritis - which is the least common form of arthritis in children. This form is preceded by a rash, high fever, and joint soreness. These symptoms may appear a month or two before the arthritis.
3) Pauciarticular rheumatoid arthritis - this form of arthritis first appears in only a few specific joints. It may be contained to these joints or gradually spread to others.

Osteoarthritis is a degenerative joint disease that is associated with the wear and tear on weight-bearing joints. This type of arthritis, although associated with aging, has been

found in increasing numbers of young people. Unlike juvenile rheumatoid arthritis, which some children will grow out of, osteoarthritis can only become worse.

Physical educators who work with arthritic children need to consult the child's doctor to provide the appropriate program. "The program objectives usually are: 1) preventing deformity, 2) preventing atrophy, and 3) maintaining normal range of motion in the joints" (Ohio Department of Education report). Teachers program arthritic students into activities that do not traumatize the joints of the child (such as contact sports). Activities that are suggested for children with arthritis include rhythmic stretching, aquatic activities, and some forms of dance. Arthritic children may wear braces to prevent contractures, so some modification of activities may be necessary to faciliate maximum participation by the student.

Cerebral Palsy

Cerebral palsy (CP) is a non-progressive lesion of the central nervous system which causes motor impairment. A child with CP can be normal in all areas except motor ability, but CP can also be associated with mental retardation, sensory impairment, speech defects and perceptual deficits. There are six neuromotor classifications of cerebral palsy: 1) spastic, 2) athetoid, 3) ataxia, 4) rigid, 5) tremor, and 6) mixed.

Spastic cerebral palsy is the most common form of CP, affecting about 40 to 60 percent of the CP population. The spastic child moves in a jerky manner, which is dominated by one muscle group. This type of involvement is characterized

by stiff and contracted muscles in the extremities, exaggerated stretch reflexes, hyperactive deep-tendon reflexes, inward rotation of the legs, and a scissors gate. The exaggerated stretch reflexes cause the child to have vigorous contractions as a response to muscle stimulation. If the contractions continue over a period of time, muscles can shorten, causing bone deformities.

Athetoid CP is the second most common form, which is characterized by uncontrolled and involuntary movements. The athetoid is unable to produce the movement he desires and his posture is often a problem. "Specifically, there are three kinds of movement seen in an athetoid child, who tends to be affected in all four limbs.

1) intermittent muscular spasms - occur in a predictable pattern and are triggered by changes of head position due to the tonic labyrinthine reflexes.

2) moving spasms - the limbs may alternate in pronation and supination often in a rhythmic nature.

3) brief localized contractions - can appear in all muscle groups. They may appear as minor twitches" (Cratty, pp. 27, 28).

The third most common form of CP is Ataxia. Ataxia is a form of CP characterized by poor balance and little kinesthetic awareness. Children with ataxia have poor muscle tone, and walking or standing will be difficult. Fine-muscle control will be affected due to lack of coordination. There may be cases of mild undiagnosed ataxia in some school-age children often referred to as clumsy.

Rigid CP is characterized by a lack of the stretch reflex,

involuntary motion, muscle elasticity, and greater resistance to slow rather than rapid motion. The child may be in a fixed position or have a small degree of movement. Rigidity is sometimes thought of as a severe form of spasticity.

Tremor is a form of CP characterized by uncontrolled involuntary movement. These movements may be rhythmic or alternating in nature. A person afflicted with tremor CP will be more successful at a gross-motor tasks than fine-motor tasks. When no one CP type dominates, the condition is described as mixed. In the past few years however, this term has been used less and less.

When working with a CP child in a physical education class, the instructor must consider the type of CP the child has and to what extent the child is involved. "The spastic needs gait training and range-of-motion exercise. The athetoid needs relaxation training to facilitate muscular control. The ataxic needs a great deal of perceptual activities, particularly in terms of balance" (Ohio report).

Muscular rehabilitation and social development are two basic areas of programming for CP students. If the child is under the care of a physical therapist (PT), the physical educator should work with the therapist and familiarize himself/herself with the PT program. The physical therapist can also recommend certain types of activities for CP child.

Physical activities that are emotionally or highly arousing should be avoided when programming for CP students because the excitement is likely to make movement more difficult for them

to control. "Most importantly teachers should attempt to avoid activities that involve movements and efforts opposite to those that are useful to the children" (Cratty, p. 319). By considering the child's involvement and consulting the child's PT and doctor, a physical educator can design activities to help the child with body image, speech, muscle control, etc.

Cardiac Disabilities

There are two major types of heart disabilities in children: those that need correction at birth and cardiovascular disorders that are acquired after birth. Congenital heart diseases (at birth) are by far more prevalent than the acquired forms in children.

Congenital Heart Defects. Congenital heart defects are malfunctions of the heart due to heart's or major blood vessels' failure to mature. "More than half of the congenital heart disorders are caused by: 1) ventricular septal defects, 2) patent ductus arteriosis, and 3) Tetralogy of Fallot" (Seaman et al). Many of these conditions can now be completely or partially repaired by surgery.

A child with a ventricular septal defect is born with an opening in the muscular wall separating the two ventricles. This type of disorder will affect pulmonary circulation. The child is described as having a heart murmur if the opening is small. If the opening is larger and not surgically corrected, it may result in heart enlargement and the child may be slow in growth and development. In more extreme cases if the defect in the heart wall is too large, heart failure may occur.

Patent ductus arteriosus occurs in children when the duct between the pulmonary artery and the aorta fails to close or the closure is incomplete at birth. This duct is used for fetal circulation and should close permanently in a few weeks after birth. When this duct fails to close, it places an undue stress on the heart, since some of the blood that is pumped is going directly back into the aorta prior to movement to the lungs. This condition may be corrected with surgery and in such instances should not present a problem in the physical education class.

A condition known as Tetralogy of Fallot is caused by a combination of four heart abnormalities. These abnormalities are 1) ventricular septal defect, 2) pulmonary stenosis, 3) enlarged right ventricle and 4) overriding of the aorta. As a result of this condition, poorly oxygenated blood is circulated through the body which may cause a "blue baby" (cyanosis). Tetralogy of Fallot usually cannot be completely corrected, although some correction can be made improving the child's overall condition.

There are many other congenital heart defects that make up the other 50 percent of the cases, although none of these is as prominent as the three conditions mentioned above. Examples of other heart conditions are: 1) coarctation of the aorta in which there is a narrowing or constriction of the aorta, 2) atrial septal defect - an opening in the wall between the left and right atria similar to ventricular septal defect, 3) aortic stenosis, a congenital obstruction caused by deformity

of the aortic valve, and 4) pulmonary stenosis, similar to aortic stenosis but it is the pulmonary valve that is obstructed.

Physical educators when working with cardiac patients should develop an individualized program for each student depending on the severity of his condition. The instructor should work closely with the child's parents and doctor so that the program meets the child's needs and is not detrimental to the child's health. Some children will need to be closely monitored and refrain from participation in vigorous activities. Many heart patients can participate in leisure activities such as ping pong, cards, archery, etc. Aquatics and other less taxing sports can be participated in as long as the activity is taken slowly and easily. Students should be allowed to participate in as much as possible and over protection should be guarded against. Activities should be developed upon the advice of doctor and parents. During class, observe to determine when the child becomes overtaxed in any activity.

Rheumatic Heart Disease. Ten percent of those people with cases of rheumatic fever develop rheumatic heart disease. This disease often causes damages to the heart and circulatory system. Because of the damage done by the disease, a child's activity level may be restricted. The physical education teacher should contact the child's doctor and proceed with a program only after working with the doctor to obtain advice and recommendations.

The following are some suggested activities for cardiac patients depending upon their restrictions. But as stated before, all activities should be approved by their doctor.

"CLASS II (MODERATE RESTRICTION)

Sports	Games	Other Activities
Softball	Dodge Ball	Hiking
Table Tennis	Busy Bee	Swimming
Tennis	Run Rabbit Run	Backpacking
Badminton	Brownies and Fairies	Bicycling
Fencing		Canoeing
Handball		Skating
Racketball		Stunts and Tumbling
Squash		Relays

CLASS III (MARKED RESTRICTION)

Sports	Games	Other Activities
Archery	Croquet	Walking
Horseshoes	Hopscotch	Fishing
Shuffleboard	Steal the Bacon	Social Dancing (slow)
Bowling	Duck Duck Goose	Square Dancing (walk)
Golf	Red Rover	Sailing (little effort)
	Red Light	
	Drop the Handkerchief	

(Winnick, p. 397)"

Asthma

Asthma is a chronic respiratory disease characterized by breathing difficulty and wheezing interfering with normal space air flow in and out of the lungs. During an asthma attack there will be spasms of the bronchial tubes, swelling of the lining of the bronchial tubes, and excessive secretion of mucus. Most victims of asthma are under the age of fifteen. "It is estimated that asthma causes the largest number of days lost by school children due to absence" (Cratty, p. 372).

Asthma is classified into two different types: allergic and dermal respiratory asthma. Allergic asthma generally develops later in life after childhood and is associated with a history of allergies. Attacks of allergic asthma are triggered by some substance, usually airborne, that to which the person is allergic. Air pollution, dust, and pollens are some of the common substances that might percipitate an attack. Allergic asthma can be treated by trying to remove the cause of the allergic reaction.

Dermal respiratory asthma is usually developed in early childhood. This type of asthma is triggered by such non-specific factors as fatigue, infections, medicines, and emotional trauma. Mood and behavorial changes may precede each attack, although symptoms and changes will vary from child to child. This type of asthma is harder to treat than allergic asthma.

Many doctors recommend exercises for the asthmatic, so it is the physical educator's responsibility to be familiar with

the conditions of asthma and to be able to prescribe appropriate activities. The instructor needs to be aware of their students who are asthmatic. They also need information about the asthmatic child such as the type of asthma, the factors that trigger attacks, and the frequency of attacks. The following is a list of suggestions by Cratty for adjustments that might be made in a physical education program for an asthmatic child.

"1. provide game situations that are not likely to raise emotional levels so high that they might cause excess excitement, frustration, elation, or aggression.

2. provide children with ample opportunities to obtain room temperature fluids during activity periods.

3. provide places in which an overly tense or anxious asthmatic child may relax.

4. supply the child with the opportunity for frequent nose blowing.

5. provide a dust-free environment (clean, air-conditioned gym).

6. establish specific goals related to improving efficiency in breathing as well as work accomplished in moderately strenuous physical activities.

7. introduce relaxation exercises at any point when children seem to bring about an attack.

8. prevent if possible sudden alterations in body temperature as asthmatic child works out.

9. encourage the child to listen to their body signs and subtle changes indicating an attack.

10. teach the asthmatic child deep breathing exercises" (pp. 376 - 378)

Cystic Fibrosis

Cystic fibrosis is a childhood disease which is inherited and causes chronic respiratory and digestive problems. The exocrine glands secrete abnormally thick and sticky mucus. This mucus then clogs the lungs, liver and pancreas. Mucus in the bronchial tubes makes breathing difficult, and the child develops a chronic cough. Blockage of the pancreas by mucus results in frequent bowel movements, with a loss of calories through elimination. An excessive amount of salt is also lost through perspiration and saliva. "Like asthmatics, the child with cystic fibrosis finds it easier to inhale as the bronchial tubes dilate than to exhale, an action that makes the clogged bronchial tubes even smaller and more restricted" (Cratty, p. 385).

Physical educators should be aware of a child's salt loss during activity. Salt in the form of tablets may have to be given, especially in warm weather. The stamina of a child with cystic fibrosis may be somewhat less than their peers', so some activities may need to be adapted to lessen the intensity of movement needed. The teacher should note that the child will also have to cough to clear the lungs and use the bathroom more frequently than the other children.

Hypertension

Although infrequent, more signs of hypertension are being seen in children today than ever before. The normal blood

pressure values for a child during adolescence are 95-110 systolic and 65-80 diastolic. "When blood pressure is high but fairly constant and there is no immediate danger, the hypertension is described as benign, but when it is rapidly progressive and dangerous it is termed malignant" (Goldenson p. 407). Specific causes of hypertension are unknown, although it is thought to be related to heredity and in children is often the result of kidney or endocrine disease.

If physical educators have a hypertensive child in their physical education class, they should consult the child's doctor for recommendations on the type and amount of activity the child should have. The physician can also inform the teacher if the child has been placed on any drugs.

Muscular Dystrophy

Muscular dystrophy (MD) is a general term used to classify a group of inherited chronic diseases characterized by progressive degeneration of skeletal or voluntary muscles. The causes of muscular dystrophy are still not known. Muscle fibers progressively degenerate and fat cells develop between muscle tissue. The most common form of MD is genetically related and is sex-linked, with the female as the carrier. The number of boys afflicted with MD is five times the number of girls with MD. There are three common types of muscular dystrophy, which are Duchenne, facio-scapular-humeral, and juvenile muscular dystrophy.

Duchenne MD is the most severe and common type of MD. Its onset is usually in early childhood; and the earlier the

onset the more severe the condition will be, resulting in a shortened expected lifespan. Children with Duchenne MD often do not live past the teenage years. Muscular dystrophy of this type is usually first seen as clumsiness or slow development. Some symptoms that are often seen are 1) immature gait, 2) tendency to fall frequently, 3) difficulty in vigorous activities (except running), 4) hypertrophy of calf muscles, and 5) gower's sign - child won't use abdominal muscles to rise from a supine position; instead, the child will roll over onto the stomach and walk up with his/her hands. A child also develops contractures, and as the disease progresses, the child will be confined to a wheelchair or bed, with the contractures becoming worse.

According to the Muscular Dystrophy Association, MD goes through 8 different stages. The stages are:

1. walks with mild waddling gait
2. walks with moderate waddling gait; needs assistance up stairs
3. walks with moderately severe waddling gait; cannot get up stairs
4. walks with severe waddling gait; cannot rise from a chair. "At this stage the child should be encouraged to be as active as possible and not placed in a wheelchair too soon" (Cratty p. 349).
5. child is relatively independent in a wheelchair
6. child moves in wheelchair but needs help in some wheelchair activities

7. wheelchair is used with back support; child can roll chair only a short distance
8. child is a bed patient who needs assistance for daily living.

Facio-scapular-humeral MD is the most common form of MD in adults, although it usually begins in adolescence. This form of MD is not as severe as Duchenne MD, and the victim's life expectancy more closely approaches normal. This disease can also go into remission at any time. Characteristic of facio-scapulo-humeral MD are: 1) progressive weakness of the shoulder muscles, 2) progressive weakness of the facial muscles, 3) usual involvement of just the upper body but may have a waddling gait, and 4) some respiratory infection problems. This form of MD occurs in both males and females.

Juvenile MD onset is usually from 10-20 years of age. It also occurs in males and females equally. The first symptoms are seen as weakness in the shoulder muscles, but involvement will spread to both the upper and lower extremities. As in Duchenne MD, the life expectancy is lowered as the disease progresses.

Children with MD, especially in the early stages will be in physical education classes. The physical educator should encourage the child to participate in whatever activities he/she can. "Most helpful is to give such children 1) recreational activities that may be participated in in a passive fashion... 2) stretching and deep breathing exercises of various kinds" (Cratty, p. 349).

Regardless of the severity, the child should be involved

to a maximum extent in the class. The child can serve as an umpire or a scorekeeper when the time comes that he/she cannot compete. It is also important for the physical educator to have a strength maintenance program for the child to use every day to slow the progressive loss of muscular strength.

Sickle-Cell Anemia

Sickle-Cell anemia is an inherited blood disease that is caused by defective hemoglobin-forming genes. In sickle-cell anemia, the amount of oxygen in the iron lessens because of the sickle hemoglobin. The red blood cells then become less flexible, long, and rigid. These cells do not live as long as normal red blood cells. So they overload the liver with their deterioration and reduce the amount of hemoglobin available.

Some patients may experience an aplastic crisis in which the formation of new red blood cells stops. The person then needs medical attention. The symptoms of this condition are: weakness, general fatigue, sudden rise in heart rate, and fainting. The physical educator may be in a position to notice these possible changes before parents or other teachers. Children with this disease should engage in only moderate activities. This should be taken into consideration when planning the physical education program. Games in which children are required to hold their breath and in which their skin may become overheated should be avoided.

Seizure Disorders

Epilepsy. Epilepsy is a sudden transient disturbance in the brain characterized by seizures. Epilepsy is not a disease,

and its exact etiology is usually unknown. Physical educators should be cautious when such students participate in any contact sports in which head injuries might occur. Situations where the student could fall from a height, or be asked to swim underwater, holding his breath, could percipitate a seizure or create a hazardous environment and should be avoided.

Epilepsy has four common forms of seizures, these being: 1) petit mal, 2) grand mal, 3) Jacksonian, and 4) psychomotor. A seizure will occur after an abnormal discharge of electrical energy in the brain. Grand mal and Jacksonian seizures account for approximately 50 percent of all seizures. There are many factors that might cause epileptic seizures; the following is a list of such factors that teachers should be aware of:

1. hyperventilation
2. chronic head trauma
3. changes in the alkaline-acid balance of blood
4. biochemical changes occuring during menstruation
5. excessive intake of alcohol
6. emotional stress
7. excessive sensory stimulation

Many epileptics can control their seizures through the use of drugs such as dilantin and phenobarbitol.

Petit mal seizures are characterized by a momentary stoppage of movement accompanied by a stare; often the eyelids flicker. Seizures usually don't last more than 10-15 seconds, and teachers often assume that the student is daydreaming.

An epileptic can have a varying number of seizures, depending on what factors cause the specific seizure. If physical educators are aware that one of their students has petit mal seizures, they should keep a close watch on the child, because seizures can occur at any time, even when the child is involved in an activity that requires their attention.

Grand mal seizures are characterized by the child's losing consciousness and posture. During the seizure, the student passes through four stages: 1) they experience a warning "aura." Many epileptics often have a warning before their seizures, such as hearing bells, strange taste or smell, seeing lights, etc. 2) the tonic phase is characterized by the student's forcibly expelling air; muscles and body become stiff, 3) in the clonic stage, the body begins to jerk, 4) during the final stage sleep. At the end of the final stage, the child may awaken dazed and with no memory of the seizure. The seizure itself usually lasts only a few minutes, but the child may sleep for several hours afterward.

Jacksonian seizures resemble grand mal seizures. They are progressive seizures with a momentary lack of consciousness. During this type of seizure, small muscle tremors will occur on one side of the body and may spread to the other side. Jacksonian epilepsy does not have an aura preceding the seizure.

Psychomotor seizures are characterized by short changes in behavior. The child, as in many of the other seizures, may be unaware of the changes. They may appear to be in hysterics, sleepwalk, or chatter incoherently. Whatever behavior

is exhibited by the child, it is involuntary and often appears to be inappropriate.

Physical educators should be informed if any of their students have seizure disorders. In class, the child should be treated the same as any other student. One of the biggest problems is their self-image. They often encounter social embarrassment from having a seizure in front of their peers. It is helpful to explain the seizures to the class to help them understand the seizure and accept their classmate.

Children with seizure disorders should be allowed to participate in strenuous activities, but the physical education teacher should be aware of the factors which may percipitate a seizure and the possibility of a seizure's occurance. Students who have an aura before their seizures should be instructed to always inform the teacher when they are having the aura. This will enable both the student and the teacher to prepare for the seizure. When a seizure does occur, Howell suggests the following:

"1. Keep calm.
2. Do not try to restrain the person.
3. Clear the area around the person to prevent self-injury.
4. Try not to interfere with movements in any way.
5. Do not force anything between the teeth.
6. It is usually not necessary to call a doctor unless the attack is followed by another seizure.
7. Treat the incident in a calm, matter-of-fact way." (p. 386)

During a class, try and keep the student from becoming overly emotional. Use extreme care when involving such children in aquatic activit.es or climbing. Seizures in these circumstances seriously increase the possibility of related dangers.

Diabetes. Juvenile diabetes is the most common form of diabetes and usually has its onset very early in life. Diabetes is an inherited metabolic disturbance in which the pancreas does not provide enough insulin. Insulin is needed in the bloodstream to speed the transport of glucose into cells for oxidation (energy source for the muscles). Without insulin, the body loses glucose and water. Diabetes in children arises quickly, and if not diagnosed and treated can cause death.

The condition can be controlled through diet, exercise, and dosage of insulin. There must be a well controlled balance between the three factors. Juvenile diabetes usually cannot be treated with oral dosages of insulin as with the condition in adults. The amount of insulin taken is very important and must be closely monitored. Too much insulin can cause insulin shock (blood sugar level is too low), and the symptoms are headaches, dizziness, blurred vision, muscle weakness, nausea, sweating and rapid heartbeat. If reaction is not treated, the person can lapse into a coma and death can result. Insulin shock can be caused by too much exercise, an excessive dose of insulin, and skipping meals. This condition is an emergency and should be treated immediately. To treat insulin shock, give the child sugar or something containing high amounts of

sugar, preferably sweetened fruit juices or candy. The sugar should be induced into the child's body as rapidly as possible. Physical educators should always keep some type of sugar on hand in the gym to administer to students should they develop insulin shock.

While insulin shock is an immediate situation, a diabetic coma comes on over a longer period of time. It is a result of too little insulin in the bloodstream. This condition can be caused by an infection, overeating, or emotional stress. Symptoms include extreme thirst, loss of appetite, nausea, cramping, and blurring of vision. If the condition is not treated, serious complications may arise although this series of symptoms requires time to gradually build up. Children in a diabetic coma require medical attention so that their insulin intake can be regulated and returned to a satisfactory level.

Exercise for most diabetics is not restricted. The exception to this would be in situations where insulin dosage has not yet been controlled or by orders from their doctor not to exercise. Exercise does, however, act similarly to insulin by using glucose. This lowers blood sugar levels and can result in insulin shock unless the sugar is replaced. This situation is controlled by allowing a diabetic student to have a snack, therefore replacing the sugar, after exercise, if needed. Exercise when used wisely and under the directions of a doctor can help the diabetic control insulin levels as well as the secondary problem of obesity. Excess fatigue after exercise and the duration of highly competitive games should be controlled. Physical educators should observe the child

for signs of insulin shock during exercise while being aware of the health status of the students since such things as infections require more insulin and affect the child's physical limitations.

Orthopedically Impaired

According to P.L. 94-142, "orthopedically impaired means a severe orthopedic impairment which adversely affects a child's educational performance. The term includes impairments caused by congenital anomaly, impairments caused by disease, and impairments from other origins" (Federal Register 42-163).

Amputations. An amputation is the removal or absence of all or part of an extremity. Amputations can be either congenital or acquired. A congenital amputee was born with all or part of a limb missing, while an acquired amputee lost all or part of a limb as a result of an accident or surgery. All amputations are classified by the site and level of absence.

Amputations are treated through the use of prosthetic devices to enable the amputee to function as normally as possible. "It is usually found that early attachment of a false limb will encourage infants and children to incorporate the appendage into the body schema more readily than would the later introduction of the device" (Cratty, p. 250). Exercise is an important part of a patient's program when he/she is being fitted for a prosthetic device. It helps strengthen the muscles in the stump and mobilize the joints for better use of the prosthetic. Once fitted with the prosthetic, the amputee

must be taught how to use it and must practice with it. Prosthetic devices will vary depending upon what type of function is desired.

How involved in physical activ .ty amputees can become depends upon the degree of amputation and how efficient they are with their prosthetic. Many amputees are not limited in their activities, participating in swimming, skiing and other vigorous sports. Most amputees know what compensations work for them. Physical educators should be aware of these compensations so they are better able to adapt games for the needs of the amputee, if necessary. Amputees should also be encouraged to participate in activities related to lifetime sports because of the tendency to become sedentary and obese.

New or younger amputees particularly need opportunities to develop or enhance their gross-and fine-motor skills. Physical educators can design their program so that they can work on these skills. An upper-extremity amputee needs to work on catching, throwing and striking skills, while the lower-extremity amputee should work on walking and balance.

Most games can be adapted in some way to accommodate such children and the modification will depend upon the type of amputation the child has. Some games may need little or no changes at all, while others may just require a special piece of equipment. "Although children are encouraged to try as many activities as possible, it is also recommended that they concentrate on two or three so that they will develop the skills for successful participation during their adult years" (Winnick, p. 372).

Spina Bifida. Spina bifida is a congenital defect due to the failure of one or more neural arches of the spinal vertebrae to completely close during development, through this opening contents of the spinal cord may protrude. The degree of damage and paralysis depends upon the location and type of defect. There are three general levels of spina bifida: 1. Spina bifida occulta, 2. meningocele, and 3. meningomylocele.

Spina bifida occulta is the least severe form of spina bifida, in which the back arches of the vertebrae fail to form. There is no protrusion of the meninges (coverings of the spinal cord) or spinal cord. In its mildest form it may go undetected. The defect may only be covered by skin and be characterized by a tuft of hair. More serious forms of spina bifida occulta exhibit postural deviations, muscle weakness, and mild deformities of the lower extremities.

In the spina bifida meningocele, the back arches of the vertebrae also fail to form, and the covering of the spinal cord (meninges) protrudes, forming a sac. This sac is filled with the spinal fluid and is covered by the skin and subcutaneous tissue. The spinal cord and nerve rods remain in their normal position. Care must be taken not to rupture the sac and to avoid infection. The sac is usually removed surgically, and the degree of impairment is directly related to the amount of neural tissue involvement.

Meningomylocele is the severe form of spina bifida. It is characterized by the failure of the vertebrae to form and the protruding sac, but contained within the sac is also portions

of the spinal cord and nerve roots. This form is also often surgically closed but does usually result in paralysis, from the point of the defect down. A defect at or above thoracic vertebrae 12 will result in paralysis of the trunk and lower extremities. A defect at or above the 3rd or 4th lumbar vertebrae will result in paralysis of part of the hips, thigh, and all of the lower extremities. This type of spina bifida is generally associated with and complicated by hydrocephalacy and mental retardation.

Hydrocephalus is a condition in which excess cerebral spinal fluid collects in the ventricles of the brain. This enlarges the brain causing compression of brain cells, which can lead to retardation and seizures. Hydrocephalus is treated by draining the excess fluid through shunts (tubes) placed between the brain's ventricles and in the jugular vein of the neck.

Most severe spina bifida children will be confined to a wheelchair or use braces and crutches for limited ambulatory movement. Physical activity is important to strengthen weak muscles while maintaining movement in unaffected body parts, also enhancing the mobility of the child. The choice of physical activities depends upon how involved the paralysis of the child is. Those children confined to wheelchairs will participate in games and activities slightly different from the games and activities of those children who have some ability to walk.

In addition to spina bifid children, who are post-polio and who have cord lesions as a result of some trauma will have

a physical education program similar to other orthopedically impaired student. Most of these children usually will be in a physical education class after the disease or injury and rehabilitation have already been started or completed. The objectives of their physical education classes will be prevention of obesity, improved muscular strength, and recreational activities.

There are many games and activities that can be adapted for the participation of those students in wheelchairs and with braces or on crutches. Through use of games analysis, the teacher can adapt any game to the needs of her/his orthopedically impaired students. The orthopedically handicapped should be mainstreamed into regular physical education classes to give them the opportunity to interact with their peers.

For working with the orthopedically impaired Seaman and DePaul suggests the following:

"1. obtain periodic medical approval.
2. obtain medical recommendations, especially after surgery or illness
3. be aware that handicapped requires more individual and hazard-free space for activity.
4. provide frequent periods of rest for those who have limited endurance.
5. be aware of the dangers of twisting, bending, falling and lifting.
6. teach how to fall correctly from crutches, wheelchairs, or unsupported positions.

7. substitute sitting or lying positions for standing positions when necessary.
8. use lighter-weight equipment when necessary."

(pp. 344 - 345)

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Chapter 7

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Mildly Handicapped

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Moderately Handicapped

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Elementary Physical Education

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Handicapped Sports Programs

American Athletic Association of the Deaf
3916 Lantern Drive
Silver Spring, MD 20902

American Wheelchair Bowling Association
6718 Pinehurst Drive
Evansville, Indiana 47711

Amputee Sports Association
George C. Beckmann, Jr.
11705 Mercy Boulevard
Savannah, GA 31406

North American Riding for the Handicapped Association
Box 100
Ashburn, VA 22011

National Association of Sports for Cerebral Palsy
P.O. Box 3874, Amity Station
New Haven, CT 06511

National Handicapped Sports and Recreation Association
4105 E. Florida Avenue
3rd floor
Denver, Colorado 80222

National Wheelchair Athletic Association
B. Dale Wiley
660 Capitol Hill Building
Nashville, Tenn. 37179

National Wheelchair Softball Association
P.O. Box 737
Sioux Falls, S.D. 57101

National Wheelchair Basketball Association
110 Seaton Building
University of Kentucky
Lexington, KY 40506

National Foundation of Wheelchair Tennis
Brad Parks
3857 Birch Street
Box 411
Newport Beach, CA 92660

Special Olympics
Suite 203
1701 K Street, N.W.
Washington, D.C. 20006

Assessment

American Alliance for Health, Physical Education, Recreation and Dance. Testing for Impaired, Disabled and Handicapped Individuals. Washington, D.C.: Author.

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Youth Fitness Test
AAHPERD
1900 Association Dr.
Reston, VA 22091

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Developmental Profile Tests
Peabody Developmental Motor Scales
IMRID George Peabody College
P.O. Box 163
Nashville, Tenn. 27303

The Denver Developmental Screening Test
University of Colorado Medical Center
Denver, Colorado 80220

Perceptual Motor Tests
Basic Motor Fitness
Donald A. Hilsendager
Department of Physical Education
Temple University
Philadelphia, Pennsylvania 19122

Berry, Keith. Developmental Test of Visual-Motor Integration. Chicago: Follett Publishing Co., 1967.
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Oseretsky Tests of Motor Proficiency
American Guidance Service, Inc.
Publishers' Building
Circle Pines, Minnesota 55014

The Purdue Perceptual Motor Survey
Charles E. Merrill Publishing Co.
1300 Alum Creed Drive
Columbus, Ohio 43216

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Projects

Project REACHOUT
Dr. Jim Stiehl
Department of Health, Physical Education, Recreation and Dance
California State Polytechnic University of Pomona
Pomona, California 91768

In-service Training in Physical Education

Training Physical Education and Recreation Personnel to Implement Programs for Preschool Handicapped Children
Karen Littman
804 D Street, N.E.
Washington, D.C. 20002

Project Mobilitee
Hopewell Special Education Regional Resource Center
5799 West New Market Road
Hillsboro, Ohio 45133
Development of Adapted Physical Education Programs

A School-based In-service Delivery System for Leadership Training in Physical Education for Handicapped Children in Regular Education
Dr. J. A. Wessel
134 IM Circle Building
Michigan State University
East Lansing, Michigan 48824

Model of Physical Education Curriculum Dissemination for the Moderately Retarded
Dr. James L. Ballinger
Dep't. of Health and Physical Education
24 Rothwell
Columbia, Missouri 65201

The Adapted Physical Education Project: Statewide Training Model to Assist Educators in Developing-Implementing Physical Education Programs for the Handicapped
Dr. Don Futten
Center for Developmentally Disabled
Division of Training, University of South Dakota
Vermillion, South Dakota 57069

Project PELRA: Training of Personnel to Provide Physical Education in the Least Restrictive Environment
Dr. John Dunn
202 WB
Oregon State University
Corvallis, Oregon 97331

Physical Education, Recreation and Sports Skills Integration of Handicapped Children and Youth Facilitator In-service Training Protocol
Dr. Thomas Songster
Special Olympics, Inc.
1701 K St., N.W.
Suite 203
Washington, D.C. 20006

In-service Training of Special Education and Regular Education Teachers to Work with Handicapped Children
Wanda Jean Rainbolt
Department of Physical Education and Recreation
Western Kentucky University
Bowling Green, KY 42101

Project DART
Dr. Ernie Bundschuh
University of Georgia
Athens, Georgia 30602

Project Infuse
Department of Physical Education and Recreation
Box 354
University of Colorado
Boulder, Colorado 80309

PAG - Handicapped Physical Education and Recreation Training
Dr. Claudine Sherrill
P.O. Box 23717, TWV Station
Texas Women's University
Denton, Texas 76204

In-service Training for Physical Educators and Special Educators in Physical Education for the Severely Handicapped
Dr. John Dunn
Department of Physical Education, 202 WB
Oregon State University
Corvallis, Oregon 97331

Project OUTREACH: Special Physical Education Preparation Project
Dr. Joseph Winnick
Physical Education Faculty
State University College
Brockport, N.Y. 14420

USM Motor Development In-service Training Project
Dr. Walter E. Cooper
Box 8442, Southern Station
University of Southern Mississippi
Hattiesburg, Mississippi 39401

Adapted Physical Education In-service Training Institute
Dr. Dolores Geddes
Adapted Physical Education Project
Physical Education Department, PED 107
University of Southern California
Los Angeles, California 90007

Project PEOPEL - Peer Teaching in Adapted Physical Education
Mr. Larry Irmer
PEOPEL
2526 West Osborn Road
Phoenix, Arizona 85017

Advocate Organizations

AAHPERD
Programs for the Handicapped
1900 Association Drive
Reston, VA 22091

Alexander Graham Bell
Association for the Deaf
3417 Volta Place, N.W.
Washington, D.C. 20007

American Foundation for the Blind, Inc.
15 West 16th Street
New York, New York 10011

Association for Children with Learning Disabilities
2200 Brownsville Road
Pittsburgh, PA 15210

Closer Look Information Center for the Handicapped
1346 Connecticut Avenue, N.W.
Suite 1124
Washington, D.C. 20036

Council for Exceptional Children
1920 Association Drive
Reston, VA 22091

Muscular Dystrophy Association of America, Inc.
810 Seventh Avenue
New York, New York

National Association of the Physically Handicapped, Inc.
6473 Grandville Avenue
Detroit, Michigan 48228

National Association of Retarded Citizens
2709 Avenue E, East
P. O. Box 6109
Arlington, Texas 76011

National Foundation of Neuromuscular Diseases
250 West 57th Street
New York, New York 10019

United Cerebral Palsy Association
66 East 34th Street
New York, New York 10016

U.S. Office of Education
Bureau of the Handicapped
400 Maryland Avenue, S.W.
Washington, D.C. 20202

Equipment
Blind Sports, Inc.
355 S. Van Ness Avenue
San Francisco, CA 94103

Educational Activities, Inc.
P.O. Box 392
Freeport, N.Y. 11520

Educational Teaching Aids
159 West Kinzie Street
Chicago, Illinois 60610

Kimbo Educational Records
P.O. Box 246
Deal, New Jersey 07723

Play-Learn Products
2298 Grisson Drive
St. Louis, Missouri 63141

Raven Industries, Inc.
Box 1007
Sioux Falls, South Dakota 57101

Voit, Inc.
29 East Rawls Road
Des Plaines, Illinois 60018

Corbin, D. Inexpensive Equipment for Games, Play and Physical Activity. Dubuque: William C. Brown Co., 1972.

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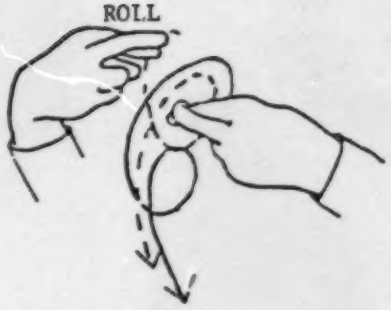
APPENDIX

HAND SIGNS

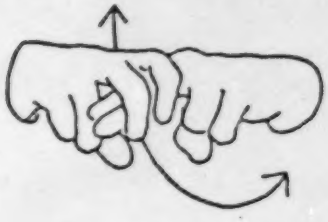
WALK

ROLL



RUN

SWING



I

YOU(singular)

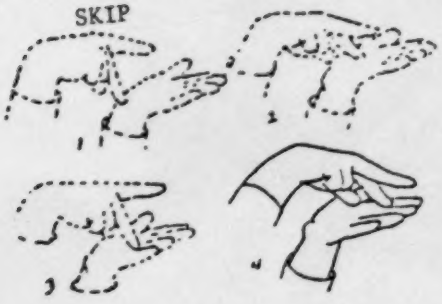
YOU (plural)

HAND SIGNS (contin.)

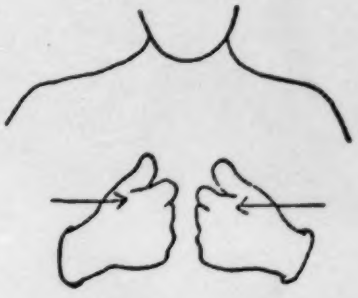
GALLOP

GYM

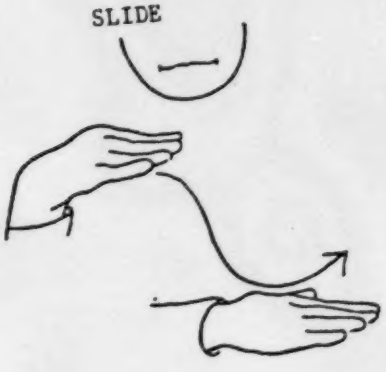
SKIP



GAME (BASEBALL, ETC.)



SLIDE



TEAM

SHE

ATHLETICS

HAND SIGNS (contin.)

Hand Signs

John M. Dunn, Adaptive Physical Education: Resource Guide for Teachers, Administrators, and Parents (Salem: Mental Health Division State of Oregon, 1979), pp. 37-40.

Interpreter Card Manual Alphabet, Kopptronix Co., Stanhope, N.J. 07874